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STATE A.Q. PROGRAM

Gem State Processing, LLC

Permit- to-Construct Modification Application
Gem State Processing Heyburn Facility

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1.0 INTRODUCTION

Gem State Processing, LLC (Gem State) is proposing to revise their current Permit to Construct (PTC), Permit No. P-2010.0183, issued April 1, 2011 to operate a potato processing facility in the Burley Industrial Park in Heyburn, ID. A site location map and plot plan is included in Appendix A. The purpose of this document is to comply with all requirements stated in Consent Order E-2011.0012, whereby PM_{10} emission factors are updated to reflected performance test results. Additionally, Gem State is proposing to route the nuisance baghouse outside and update throughput of the two agglomerator lines to 39.6 and 0.0 T/day, respectively. As part of the compliance demonstration, a significance analysis regarding $PM_{2.5}$ impacts are also included in this application. The Gem State Heyburn facility will be a minor source.

2.0 PROCESS DESCRIPTION

Gem State Processing, LLC is a potato processing company that processes, dehydrates and packs various potato products. The Heyburn facility will produce dehydrated potato flakes, seasoned agglomerated flakes, and other dehydrated potato products. Potatoes may be steam peeled, dry scrubbed, sorted, sliced, blanched, cooled, steam cooked and dried. Products are dried to 8% moisture and are broken up and ground to customer specifications, packaged or stored, and then sold. The process includes natural gas fired boilers, steam drum dryers (flakers), fluidized bed dryers and utilizes pneumatic equipment to transport their products from production to storage or packaging. A process flow diagram is contained in Appendix C.

Raw potatoes are delivered to the facility and loaded inside the potato receiving area of the facility building. The potatoes then go through a rock trap where they are rinsed with water to remove any large debris. Conveyors transfer the wet potatoes to storage bins until they are ready to be processed. The potatoes are transferred from the potato storage bin through an additional washing process and then are transferred via vertical conveyor belt to the steam peelers. After the peels are separated from the potato in the steam peeler, the potatoes are transferred to the brush scrubber and washer where the peel and any remaining dirt and debris are removed. Following inspection of the peeled and washed potatoes, they are transferred via vertical auger to the slicer and then into a blancher where they are cooked. The potatoes are then cooled in water and transferred to the steam cooker. Following the steam cooker, the cooked potatoes are placed in the ricer. The riced pieces are then transferred via auger into steam powered drum dryers (flakers). The drum dryers reduce the moisture in the potatoes from approximately 80% to 8%. Dried flakes are then either transferred to the packaging lines and silos or through the agglomeration line where oil and flavorings are added. The seasoned flakes from the

agglomeration line are then transferred to the bubble sheet dryer (agglomeration line) and subsequently to the packaging lines. Steam for the steam peelers and drum dryers will be supplied by boilers operating on natural gas.

2.1 **Emissions Sources**

Emissions sources at the facility will include the following:

Boilers

The Gem State facility utilizes one 1600 hp and two 1200 hp natural gas fired boilers to produce steam for the various potato processing equipment installed at the facility. The boilers have low NO_x burners for control of NO_x and CO. The boilers are a source of natural gas combustion emissions. Emission factors from AP-42, Section 1.4 were used to calculate natural gas combustion emissions. Emission factors for NO_x and CO were provided by the manufacturer. Manufacturer information on the boilers is included in Appendix D (this information was also provided in the previous permitting application). There are no emission changes to these units from the current permit.

Air Makeup Units

Three 9.0 MMBtu/hr and one 10.0 MMBtu/hr Reyco Air Makeup Unit are used to provide fresh air into the facility, provide heating for employee comfort, and maintain positive pressure inside the processing areas. The air makeup unit burners are natural gas fired and exhaust into the facility building. During the warmer spring, summer and fall months, the facility does not need to be heated and the air makeup burners only run a limited number of hours. Gem State estimates that the air makeup burners will run 20% of the time in May, June, and September, 5% of the time in July and August, 50% of the time in October, and 100% of the time when the facility is operating in the remaining months of the year, for a total of 5270.4 operating hours per year. This is a conservative estimate because the burners may actually be shut off in mid-June through the end of August, when heat is not required for employee comfort. The air makeup unit fans run on electric power, and run whenever the facility is operating. The facility exhaust system, consisting of several rooftop exhaust stacks, is used to exhaust pollutants from the air makeup unit burners. The air makeup unit burners are a source of natural gas combustion emissions. Emission factors from AP-42, Section 1.4 were used to calculate natural gas combustion emissions. There are no emission changes to these units from the current permit.

Bubble Sheet Dryers

The Gem State facility utilizes two natural gas fired bubble sheet dryers (fluidized bed dryers) for operation of the processing agglomeration line. Oils and other flavorings are added to the flakes coming out of the drum dryers. The flakes then pass through the bubble sheet dryers.

The dryers are a source of both natural gas combustion emissions and process particulates. Emission factors from AP-42, Section 1.4 were used to calculate natural gas combustion emissions. Information from performance tests conducted on September 21, 2011 was used to develop new emission factors associated with the Bubble Sheet Dryers. EPA test methods 201A/202 were used and a particulate emission factor of 0.43 lb/process ton was calculated. See Appendix F for the full test report.

In accordance with Permit Condition 19 of Permit No. P-2010.0183, the total daily emissions for each agglomerator line is calculated using a ratio of the originally assumed rate of 0.35 lb/hr (combination of process and combustion emissions) and the performance test results.

$$\frac{0.35lb/hr}{0.43lb/ton} * \frac{24hr}{day} = 19.5T/day$$

The calculated throughput is applicable to each agglomerator line. Emissions are updated for this revision, whereby Line #1 throughput is increased and Line #2 throughput is decreased from the 19.5 ton/day limit calculated above. For complete details refer to the Ambient Air Quality Analysis section of this application.

Drum Dryers (Flakers)

Gem State operates six steam powered drum dryers. Emissions from the drum dryers include process particulate and exhaust through the drum fan hood or snifter fan drum exhausts. The primary purpose of the snifter fan drum is to pull moisture off of the drum dryers. Only a very small portion, approximately 0.05% of flakes passing through the drum dryer, will enter the snifter fan drum. Emissions from the snifter fan drums will be controlled by a Snifter Fan Collection System, designed and manufactured by Idaho Steel. Idaho Steel guarantees a collection efficiency of 80% of 10 micron or larger particles. The manufacturer guarantee is included in Appendix D. Any particulate not captured by the Snifter Fan Collection System will exhaust through the snifter fan hood rooftop exhausts.

Equipment and process at the Gem State facility were originally thought to be similar to those at the Idahoan Foods, Lewisville facility. Emissions factors for the Gem State drum dryers were based on source tests from Flaker Line 1 and Flaker Line 2 at the Idahoan Lewisville facility. The Idahoan facility tested Flaker Line 1 twice and calculated emission factors of 0.69 lb PM_{10}/ton and 0.75 lb PM_{10}/ton based on the test data (Method 5/202, 12/1/2005). To conservatively estimate the emissions, the Gem State facility was using an emissions factor of 0.82 lb PM_{10}/hr for the drum dryers.

However, a performance test conducted on July 19, 2011 indicated that the drum dryer emission rate is 0.63 lb PM_{10}/hr. Also, the snifter stacks assumed a rate of 0.013 lb PM_{10}/hr, but test results indicate a rate of 0.02 lb PM_{10}/hr. The corresponding increases and decreases of emissions were applied to the significance analysis. For complete details refer to the Ambient Air Quality Analysis section of this application.

Baghouses

Baghouses are used to convey the dried flakes to the different packaging areas, and include a pneumatic conveying line (conveys flakes from the drum dryers), six plant receiver baghouses, truck loadout baghouse, rail load baghouse, and silo bin vent baghouses (only one of the four silo bin vent baghouses will operate at a time). There are also three negative air baghouses that are associated with the plant receiver baghouses. These baghouses are used as process equipment but also control PM_{10} emissions. With the exception of the rail load baghouse and silo bin vent baghouses, all the above listed baghouses initially discharged into the facility building. A nuisance dust collector baghouse used to control fugitive emissions from process equipment and the above mentioned indoor discharging baghouses will now be exhausted outside the building. An emission factor of 0.007 grain/dscf (manufacturer's guarantee) was assumed for the indoor discharge baghouses, silo bin vent baghouses and rail load baghouse. Emissions from the nuisance dust collector were calculated by assuming 99.9% control of emissions from the indoor discharging baghouses. The manufacturer control guarantee for the nuisance dust collector baghouse is included in Appendix D.

Emissions estimates for the above listed sources are included in Section 4.0. Stack parameters for each piece of equipment are included in the Ambient Impact Assessment included as Section 5.

2.2 **Air Pollution Control Equipment**

In a November 27, 1995 letter from David Solomon, USEPA Office of Air Quality Planning and Standards to Timothy J. Mohin, Government Affairs Manager, Intel Government Affairs, Mr. Solomon (included as Appendix G) address criteria for determining whether equipment is air pollution control equipment or process equipment. Mr. Solomon outlines three questions that should be considered in determine whether certain devices or practices should be treated as pollution controls or are inherent to the process. The questions are listed below.

1. *Is the primary purpose of the equipment to control air pollution?*

2. *Where the equipment is recovering product, how do the cost savings from the product recovery compare to the cost of the equipment?*

3. *Would the equipment be installed if no air quality regulations are in place?*

Responses to each question as they apply to the Gem State Potato Processing facility in Heyburn, ID are given below.

1. The Gem State facility will utilize a total of 19 baghouses at the facility in Heyburn. These baghouses include six plant receiver baghouses, four bin vent baghouses, three negative air baghouses, two baghouses associated with the agglomerator line, one truck loadout baghouse, one rail load baghouse, one pneumatic conveying line baghouse and one nuisance dust collector. With the exception of the nuisance dust collector, all of the above listed baghouses are used to convey or transfer product from one point in the process to the next or from the process or storage to the different shipping methods. The nuisance dust collector will be used to control dust and particulate from the process and indoor discharging baghouses. Therefore, with the exception of the nuisance dust collector, the primary purpose of the baghouses is not to control air pollution.

2. The baghouse equipment installed at the facility will not be used to recover product.

3. As described in #1 above, the primary purpose of the baghouses (with the exception of the nuisance dust collector) is to convey product. Therefore, the equipment would be installed if no air quality regulations were in place.

Based on the responses and explanations given in numbers one through three above, it is the opinion of JBR and Gem State that the baghouses installed at the Gem State facility in Heyburn, with the exception of the nuisance dust collector, should be considered inherent to the process, and should not be considered as pollution control equipment.

The three natural gas fired boilers will be equipped with Low NO_x burners for control of NO_x and CO. Manufacturer guaranteed emissions factors for NO_x and CO are included in Appendix D.

3.0 REGULATORY APPLICABILITY

A review of applicable State and Federal Rules for each emissions unit is provided in Sections 3.1 and 3.2 below.

3.1 State Regulatory Applicability

A review of applicable requirements of the Rules for the Control of Air Pollution in Idaho is provided in Table 3-1. Each regulation is described in the sections following the table.

Table 3-1 State Regulatory Applicability Summary

Section	Description	Regulatory Citation	Applicable?
3.1.1	Certification of Documents	IDAPA 58.01.01.123	Yes
3.1.2	Excess Emissions	IDAPA 58.01.01.130-136	Yes
3.1.3	Ambient Air Quality Standards for Specific Air Pollutants	IDAPA 58.01.01.577	Yes
3.1.4	Toxic Air Pollutants	IDAPA 58.01.01.585 and 586	Yes
3.1.5	New Source Performance Standards	IDAPA 58.01.01.590	Yes
3.1.6	National Emissions Standards for Hazardous Air Pollutants	IDAPA 58.01.01.591	Yes
3.1.7	Open Burning	IDAPA 58.01.01.600-616	Yes
3.1.8	Visible Emissions	IDAPA 58.01.01.625	Yes
3.1.9	Rules for Control of Fugitive Dust	IDAPA 58.01.01.650	Yes
3.1.10	Fuel Burning Equipment – Particulate Matter	IDAPA 58.01.01.675-681	Yes
3.1.11	Particulate Matter – Process Weight Limitations	IDAPA 58.01.01.701	Yes
3.1.12	Odors	IDAPA 58.01.01.775-776	Yes

3.1.1 Certification of Documents

IDAPA 58.01.01.123 requires all documents including application forms for permits to construct, records, and monitoring reports submitted to the Department shall contain a certification by a responsible official. Gem State will comply with this requirement and the appropriate certifications by a responsible official are being submitted with this application.

3.1.2 Excess Emissions

IDAPA 58.01.01.130-136 establishes procedures and requirements to be implemented in all excess emissions events. Gem State will comply with the procedures and requirements outlined in Section 131-136 and submit the necessary information and reports to DEQ related to excess emissions due to startup, shutdown, scheduled maintenance, safety measures, upsets and breakdowns.

3.1.3 Ambient Air Quality Standards for Specific Air Pollutants

IDAPA 58.01.01.577 establishes ambient air quality standards for specific air pollutants including PM_{10}, Sulfur Dioxide, Ozone, Nitrogen Oxide, Carbon Monoxide, Fluorides and Lead. Gem State has demonstrated compliance with these standards. The previous permitting action was not required to demonstrate compliance with $PM_{2.5}$ standards. Therefore, IDEQ asked that a significance analysis be conducted to show that the change in emission (an overall decrease) did not exceed the Significant Impact Level (SIL). This analysis and documentation of compliance is included in Section 5 of this application.

3.1.4 Toxic Air Pollutants

IDAPA 58.01.01.585 and 586 establishes requirements for compliance with toxic air pollutants. Gem State demonstrated compliance with the standards during the previous permitting action. There are no changes in toxic emissions due to this revision.

3.1.5 New Source Performance Standards

New Source Performance Standards (NSPS) in 40 CFR Part 60 are applicable to new, modified, or reconstructed stationary sources that meet or exceed specified applicability thresholds. Subpart Dc of the NSPS, "Standards of Performance for Small Industrial, Commercial, and Institutional Steam Generating Units" applies to the proposed boilers because the total heat input is between 10 and 100 million British thermal units per hour (MMBtu/hr) and was constructed after 1989. The boilers are not subject to any SO_2 emission limitations in Subpart Dc because they will operate on natural gas and do not combust oil, coal, or combinations that include coal and/or oil. The boilers are not subject to any PM or PM opacity emissions limitations in Subpart

Dc because they do not combust coal, oil, wood, a mixture of these fuels, or a mixture of these fuels with any other fuels. The boilers are subject to the applicable monitoring and recordkeeping requirements identified in NSPS Subpart Dc Part 60.48c.

3.1.6 National Emission Standards for Hazardous Air Pollutants

Two sets of National Emissions Standards for Hazardous Air Pollutants (NESHAPs) may potentially apply to the Gem State facility. The first NESHAP regulations were developed under the auspices of the original Clean Air Act. These standards are codified in 40 CFR Part 61, and address a limited number of pollutants and industries. The Gem State facility does not fall under any of the industries or have the potential to emit any of the pollutants listed in 40 CFR Part 61, and therefore, 40 CFR Part 61 regulations do not apply to this facility.

Newer regulations are codified in 40 CFR Part 63 under the authority of the 1990 Clean Air Act Amendments (CAAA). These standards regulate HAP emissions from specific source categories and typically affect only major sources of HAPs. Part 63 regulations are frequently called Maximum Achievable Control Technology (MACT) standards. Major HAP sources have the PTE 10 tpy or more of any single HAP or 25 tpy or more of all combined HAP emissions. At the Gem State facility, potential emissions of individual HAPs will be less than 10 tpy and combined HAP emissions will be less than 25 tpy. Therefore, the facility is not subject to 40 CFR Part 63.

3.1.7 Open Burning

IDAPA 58.01.01.600 and 616 establishes requirements for open burning. Gem State does not expect to conduct open burning at the facility however will comply with the requirements under Section 600-616 if any allowable burning is to be conducted at the facility.

3.1.8 Visible Emissions

IDAPA 58.01.01.625 restricts discharge of air pollutants into the atmosphere which is greater than 20% opacity for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period. Gem State will comply with this rule by conducting monthly facility-wide inspections of potential sources of visible emissions, during daylight hours and under normal operating conditions. The inspection will consist of a see/no see evaluation for each potential source. If any visible emissions are observed Gem State will take corrective action or perform a Method 9 opacity test in accordance with the procedures outlined in IDAPA 58.01.01.625. Gem State will keep records onsite documenting the monthly visible emission inspection and Method 9 test conducted. However, it should be noted that during the winter months, the opacity may

seem a bit higher. That is not due to anything more than water vapor being emitted from the stacks.

3.1.9 Rules for Control of Fugitive Dust

IDAPA 58.01.01.650 requires that all reasonable precautions be taken to prevent the generation of fugitive dust. Gem State will comply with fugitive particulate matter regulations, including through the use of hoods, fans and fabric filters to enclose and vent potential fugitive particulate matter.

3.1.10 Fuel Burning Equipment – Particulate Matter

IDAPA 58.01.01.676 restricts any fuel burning source of greater than 10 MMBtu to limit the PM released from combustion to 0.015 gr/dscf for gas fuel. The boilers and Reyco Air Makeup Unit #4 are greater than 10 MMBtu/hr, and will comply with this standard as shown in Table 3-2 below. All natural gas combustion equipment is in compliance with the grain loading standard.

Table 3-2 Grain Loading Emissions for Natural Gas Combustion

Source	PM Emission Factor (lb/scf)[a]	Gas Volume @ 3% O_2 (dscf/MMBTU)	Combustion Volume of 1 cubic foot of gas (dscf/scf)	Grain Loading (grain/dscf)	Grain Loading Standard (grain/dscf)	Meet Grain Loading Standard?
Boiler #1	7.6×10^{-6}	1.198×10^{4}	12.58	4.23×10^{-3}	0.015	Yes
Boiler #2	7.6×10^{-6}	1.198×10^{4}	12.58	4.23×10^{-3}	0.015	Yes
Boiler #3	7.6×10^{-6}	1.198×10^{4}	12.58	4.23×10^{-3}	0.015	Yes
AMU #4	7.6×10^{-6}	1.198×10^{4}	12.58	4.23×10^{-3}	0.015	Yes

[a]AP-42, Table 1.4-2, 1998.

3.1.11 Particulate Matter – Process Weight Limitations

IDAPA 58.01.01.701 promulgates restrictions on PM for the entire facility based on process weight. Fuel burning equipment at the facility is not subject to this requirement. Process weight calculations are shown in Table 3-3 below.

Table 3-3 Process Weight Calculations

Source	Process Weight, PW (lb/hr dry)	PM-10 Emissions - Estimated (lb/hr)	Process Weight Rate Limitations - E (lb/hr)	In Compliance? (Y/N)
Drum Dryer Drum Fan Hood #1	2250	0.63	4.62	Y
Drum Dryer Snifter Fan Drum#1	1.125	0.02	0.05	Y
Drum Dryer Drum Fan Hood #2	2250	0.63	4.62	Y
Drum Dryer Snifter Fan Drum #2	1.125	0.02	0.05	Y
Drum Dryer Drum Fan Hood #3	2250	0.63	4.62	Y
Drum Dryer Snifter Fan Drum #3	1.125	0.02	0.05	Y
Drum Dryer Drum Fan Hood #4	2250	0.63	4.62	Y
Drum Dryer Snifter Fan Drum #4	1.125	0.02	0.05	Y
Drum Dryer Drum Fan Hood #5	2250	0.63	4.62	Y
Drum Dryer Snifter Fan Drum #5	1.125	0.02	0.05	Y
Drum Dryer Drum Fan Hood #6	2250	0.63	4.62	Y
Drum Dryer Snifter Fan Drum #6	1.125	0.02	0.05	Y
Bubble Sheet Dryer #1	3300	0.71	5.81	Y
Bubble Sheet Dryer #2	0	0.00	0.00	Y

E = Emission Limit = $0.045(PW)^{0.60}$, if PW is less than 9,250 lb/hr.

3.1.12 Odors

IDAPA 58.01.01.775-776 requires no emissions of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution. Gem State will comply with this requirement by keeping records of any odor complaints received and will take appropriate action for each complaint which has merit.

3.2 Federal Regulatory Applicability

A review of applicable Federal Rules is provided in Table 3-4. Included in Appendix B is the completed federal regulatory applicability FRA form.

Table 3-4 Federal Regulatory Applicability Summary

Section	Description	Regulatory Citation	Applicable?
3.2.1	National Ambient Air Quality Standards (NAAQS)- (dispersion modeling)	40 CFR Part 50	No
3.2.2	Title V Operating Permit	40 CFR Part 70	No
3.2.3	Air Pollutants (NESHAPs)	40 CFR Parts 61, 63	No
3.2.4	New Source Review (NSR)	40 CFR Part 52	No
3.2.5	New Source Performance Standards (NSPS)	40 CFR Part 60	Yes
3.2.6	Acid Rain Requirements	40 CFR Parts 72–78	No
3.2.7	Risk Management Programs For Chemical Accidental Release Prevention	40 CFR Part 68	No

3.2.1 National Ambient Air Quality Standards (NAAQS)

Primary National Ambient Air Quality Standards (NAAQS) are identified in 40 CFR Part 50 and define levels of air quality, which the United States Environmental Protection Agency (USEPA) deems necessary to protect the public health. Secondary NAAQS define levels of air quality, which the USEPA judges necessary to protect public welfare from any known, or anticipated adverse effects of a pollutant. Examples of public welfare include protecting wildlife, buildings, national monuments, vegetation, visibility, and property values from degradation due to excessive emissions of criteria pollutants.

Specific standards for the following pollutants have been promulgated by USEPA: $PM_{2.5}$, PM_{10}, SO_2, NO_x, CO, ozone, and lead. The Gem State facility will emit $PM_{2.5}$, PM_{10}, SO_2, NO_x, CO, and VOCs, a precursor to ozone. Only a significance analysis was performed for this revision. Complete details are available in Section 5 of this application.

3.2.2 Title V (Part 70) Operating Permit

Title V of the Clean Air Act (CAA) created the federal operating permit program. These permitting requirements are codified in 40 CFR Part 70. These permits are required for major sources with a PTE (considering federally enforceable limitations) greater than 100 tpy for any criteria pollutant, 25 tpy for all hazardous air pollutants (HAPs) in aggregate, or 10 tpy of any single HAP. Gem State is a minor source because the potential to emit of any criteria pollutant is less than 100 tons per year, the potential to emit of all HAPs in aggregate is less than 25 tpy, and the potential to emit of any single HAP is less than 10 tpy.

3.2.3 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

National Emission Standards for Hazardous Air Pollutants are discussed in Section 3.1.7 above.

3.2.4 New Source Review (NSR) Requirements

Minidoka County is designated as an attainment area for all criteria pollutants. Therefore, the prevention of significant deterioration (PSD) regulations codified in 40 CFR Part 52 could potentially apply to the proposed facility. The PSD rule applies to: (1) a new major source that has the potential to emit 100 tons per year or more for any criteria pollutant for a facility that is one of the 28 industrial source categories listed in 40 CFR § 52.21(b)(1)(i)(a); or (2) a new major source that has the potential to emit 250 tons per year or more of a regulated pollutant if the facility is not on the list of industrial source categories; or (3) a modification to an existing major source that results in a net emission increase greater than a PSD significant emission rate as specified in 40 CFR § 52.21 (b)(23)(i); or (4) a modification to an existing minor source that is major in itself. The Gem State facility does not fall under one of the 28 industrial source categories, nor will the PTE exceed 250 tpy for any regulated pollutant. Therefore, Gem State is not subject to PSD regulations.

3.2.5 New Source Performance Standards (NSPS)

New Source Performance Standards are discussed in Section 3.1.6 above.

3.2.6 Acid Rain Requirements

The acid rain requirements codified in 40 CFR Parts 72-78 apply only to utilities and other facilities that combust fossil fuel and generate electricity for wholesale or retail sale. The proposed facility will not produce electrical power for sale. Therefore, the facility is not subject to the acid rain provisions and will not require an acid rain permit.

3.2.7 Risk Management Programs for Chemical Accidental Release Prevention

The facility is not subject to the Chemical Accidental Release Prevention Program and will not be required to develop a Risk Management Plan (RMP). Facilities that produce, process, store, or use any regulated toxic or flammable substance in excess of the thresholds listed in 40 CFR Part 68 must develop a RMP. The facility does not store any regulated toxic or flammable substances in excess of the applicable thresholds. A RMP is not necessary for this facility.

4.0 EMISSIONS SUMMARY

The only emission changes resulting from this revision are the aggregated increases and reductions pertaining to the drum dryer stacks, snifter stacks, nuisance baghouse and bubble sheet dryers. The changes are strictly process particulate emissions. A complete emissions inventory is included in Appendix E.

As discussed in Section 2.2, even though several baghouses will be installed at the Gem State facility, only one, the nuisance dust collector is considered as pollution control equipment. The nuisance dust collector has a manufacturer guaranteed collection efficiency of 99.9% of incoming particulate 2 micron and larger. In addition to the nuisance dust collector baghouse, process particulate will be controlled by the Idaho Steel Snifter Fan Collection System, installed on each of the drum dryer snifter fan drums. The snifter fan filter system has a manufacturer guaranteed removal efficiency of 80% of 10 micron or larger particles. Both the nuisance dust collector and snifter fan collection system will be used to control PM, PM_{10} and $PM_{2.5}$.

Documentation of compliance with NAAQS standards, Acceptable Ambient Concentrations (AACs) for IDAPA 58.01.01.585 non-carcinogen TAPs and Acceptable Ambient Concentrations for Carcinogens for IDAPA 58.01.01.586 carcinogen TAPs is documented in the air quality modeling report included in Appendix E.

4.1 **Criteria Pollutants**

As discussed in Section 2.1, sources of criteria pollutant emissions at the Gem State facility will be natural gas combustion from the boilers, air makeup unit burners, bubble sheet dryers and National Dryer and process particulates from the drum dryers, bubble sheet dryers process baghouses, and the nuisance dust collector. Emission factors for natural gas combustion were obtained from AP-42 Section 1.4.

Table 4-1 below shows the controlled facility-wide pre-project PTE for criteria pollutants. Table 4-2 shows the controlled facility-wide post-project PTE for criteria pollutants. Please note that there are a total of six plant receiver baghouses; one for each drum dryer. The Multi-Purpose, one off-spec, sack/tote and bag packing remain #1-#4. These changes have been accounted for in the Post-Project calculations.

Table 4-1 Facility Criteria Pollutant Pre-Project PTE

	Fuel Combustion of Natural Gas											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Boiler #1 (1200 hp)	1.742	7.422	1.936	8.247	0.048	0.206	0.027	0.113	0.194	0.825	0.000	0.000
Boiler #2 (1200 hp)	1.742	7.422	1.936	8.247	0.048	0.206	0.027	0.113	0.194	0.825	0.000	0.000
Boiler #3 (1600 hp)	2.323	9.896	2.581	10.996	0.065	0.275	0.035	0.151	0.258	1.100	0.000	0.000
Reyco AMU #1 850	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #2 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #3 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #4 1250	0.980	2.584	0.824	2.170	0.075	0.196	0.006	0.016	0.054	0.142	0.000	0.000
Bubble Sheet Dryer #1	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000
Bubble Sheet Dryer #2	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000

	Particulate Equipment											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Silo Bin Vent Baghouse #1					0.06	0.26						
Silo Bin Vent Baghouse #2					0.06	0.26						
Silo Bin Vent Baghouse #3					0.06	0.26						
Silo Bin Vent Baghouse #4					0.06	0.26						
Plant Reciever Baghouse #1					0.07	0.31						
Plant Reciever Baghouse #2					0.07	0.31						
Plant Reciever Baghouse #3					0.06	0.26						
Plant Reciever Baghouse #4					0.06	0.26						
Truck Loadout Baghouse					0.06	0.26						
Rail Load Baghouse					0.06	0.26						
Pneumatic Conveying Line Baghouse					0.06	0.26						
Nuisance Dust Collector					0.0003	0.0014						
Drum Dryer Drum Fan Hood #1					0.82	3.47						
Drum Dryer Snifter Fan Drum #1					0.01000	0.04260						
Drum Dryer Drum Fan Hood #2					0.82	3.47						
Drum Dryer Snifter Fan Drum #2					0.01000	0.04260						
Drum Dryer Drum Fan Hood #3					0.82	3.47						
Drum Dryer Snifter Fan Drum #3					0.01000	0.04260						
Drum Dryer Drum Fan Hood #4					0.82	3.47						
Drum Dryer Snifter Fan Drum #4					0.01000	0.04260						
Drum Dryer Drum Fan Hood #5					0.82	3.47						
Drum Dryer Snifter Fan Drum #5					0.01000	0.04260						
Drum Dryer Drum Fan Hood #6					0.82	3.47						
Drum Dryer Snifter Fan Drum #6					0.01000	0.04260						
Bubble Sheet Dryer #1					0.30	1.29						
Bubble Sheet Dryer #2					0.30	1.29						

	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
TOTAL	10.61	39.31	10.49	39.73	6.59	27.63	0.12	0.47	0.91	3.55	0.0001	0.0001

Table 4-2 Facility Criteria Pollutant Post-Project PTE

CONTROLLED CRITERIA POLLUTANTS POTENTIAL TO EMIT

	Fuel Combustion of Natural Gas											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Boiler #1 (1200 hp)	1.742	7.422	1.936	8.247	0.048	0.206	0.027	0.113	0.194	0.825	0.000	0.000
Boiler #2 (1200 hp)	1.742	7.422	1.936	8.247	0.048	0.206	0.027	0.113	0.194	0.825	0.000	0.000
Boiler #3 (1600 hp)	2.323	9.896	2.581	10.996	0.065	0.275	0.035	0.151	0.258	1.100	0.000	0.000
Reyco AMU #1 850	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #2 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #3 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #4 1250	0.980	2.584	0.824	2.170	0.075	0.196	0.006	0.016	0.054	0.142	0.000	0.000
Bubble Sheet Dryer #1	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000
Bubble Sheet Dryer #2	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000

	Particulate Equipment											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Silo Bin Vent Baghouse #1					0.06	0.26						
Silo Bin Vent Baghouse #2					0.06	0.26						
Silo Bin Vent Baghouse #3					0.06	0.26						
Silo Bin Vent Baghouse #4					0.06	0.26						
Plant Reciever Baghouse #1					0.07	0.31						
Plant Reciever Baghouse #2					0.07	0.31						
Plant Reciever Baghouse #3					0.06	0.26						
Plant Reciever Baghouse #4					0.06	0.26						
Plant Reciever Baghouse #5					0.07	0.31						
Plant Reciever Baghouse #6					0.06	0.26						
Truck Loadout Baghouse					0.06	0.26						
Rail Load Baghouse					0.06	0.26						
Pneumatic Conveying Line Baghouse					0.06	0.26						
Nuisance Dust Collector					0.0003	0.0014						
Drum Dryer Drum Fan Hood #1					0.63	2.68						
Drum Dryer Snifter Fan Drum #1					0.02000	0.08520						
Drum Dryer Drum Fan Hood #2					0.63	2.68						
Drum Dryer Snifter Fan Drum #2					0.02000	0.08520						
Drum Dryer Drum Fan Hood #3					0.63	2.68						
Drum Dryer Snifter Fan Drum #3					0.02000	0.08520						
Drum Dryer Drum Fan Hood #4					0.63	2.68						
Drum Dryer Snifter Fan Drum #4					0.02000	0.08520						
Drum Dryer Drum Fan Hood #5					0.63	2.68						
Drum Dryer Snifter Fan Drum #5					0.02000	0.08520						
Drum Dryer Drum Fan Hood #6					0.63	2.68						
Drum Dryer Snifter Fan Drum #6					0.02000	0.08520						
Bubble Sheet Dryer #1					0.71	3.02						
Bubble Sheet Dryer #2					0.00	0.00						

	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
TOTAL	10.61	39.31	10.49	39.73	5.77	24.14	0.12	0.47	0.91	3.55	0.0001	0.0001

Table 4-3 shows the decrease in total particulate emissions related to this revision. No other criteria pollutants are affected. It should be noted that $PM_{2.5}$ and PM_{10} are assumed to be equivalent.

Table 4-3 Facility Criteria Pollutant PTE Difference

	NO_x		CO		$PM_{2.5/10}$		SO_x		VOC		Lead	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project	10.61	39.31	10.49	39.73	6.59	27.63	0.12	0.47	0.91	3.55	0.0001	0.0001
Post-Project	10.61	39.31	10.49	39.73	5.77	24.14	0.12	0.47	0.91	3.55	0.0001	0.0001
Change	**0.0**	**0.0**	**0.0**	**0.0**	**-0.82**	**-3.49**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

4.2 **Toxic Air Pollutants**

Sources of toxic air pollutants (TAPs) at the Gem State facility include emissions from natural gas combustion. The boilers, air makeup unit burners, bubble sheet dryers (fluidized bed dryers) and National Dryer will run on natural gas. Table 4-4 below shows the controlled facility-wide PTE for TAPs for the previous permitting action. There are no changes to TAPs emissions as the natural gas usage remains constant.

Table 4-4 Facility TAPs PTE

NON-CARCINOGENS (POUNDS PER HOUR)					
Pollutant	**CAS #**	**EF for NG Combustion (lb/10^6 scf)[a]**	**TAP Emissions (lb/hr)**	**Screening Level (lb/hr)**	**Modeling? (Y/N)**
Antimony	7440-36-0	0.0E+00	0.00E+00	3.3E-02	No
Barium	7440-39-3	4.4E-03	9.93E-04	3.3E-02	No
Chromium	7440-47-3	1.4E-03	3.16E-04	3.3E-02	No
Cobalt	7440-48-4	8.4E-05	1.90E-05	3.3E-03	No
Copper	7440-50-8	8.5E-04	1.92E-04	6.7E-02	No
Ethylbenzene	100-41-4	0.0E+00	0.00E+00	2.9E+01	No
Fluoride (as F)	16984-48-8	0.0E+00	0.00E+00	1.67E-01	No
Hexane	110-54-3	1.8E+00	4.06E-01	1.2E+01	No
Manganese	7439-96-5	3.8E-04	8.58E-05	3.33E-01	No
Mercury	7439-97-6	2.6E-04	5.87E-05	3.E-03	No
Molybdenum	7439-98-7	1.1E-03	2.48E-04	3.33E-01	No
Naphthalene	91-20-3	6.1E-04	1.38E-04	3.33E+00	No
Pentane	109-66-0	2.6E+00	5.87E-01	1.18E+02	No
Phosphorous	7723-14-0	0.0E+00	0.00E+00	7.E-03	No
Selenium	7782-49-2	2.4E-05	5.42E-06	1.3E-02	No
1,1,1-Trichloroethane	71-55-6	0.0E+00	0.00E+00	1.27E+02	No
Toluene	108-88-3	3.4E-03	7.68E-04	2.5E+01	No
o-Xylene	1330-20-7	0.0E+00	0.00E+00	2.9E+01	No
Zinc	7440-66-6	2.9E-02	6.55E-03	6.67E-01	No
CARCINOGENS (POUNDS PER HOUR)					
Pollutant	**CAS #**	**EF for Natural Gas Combustion (lb/10^6 scf)[a]**	**TAP Emissions (lb/hr)**	**Screening Level (lb/hr)**	**Modeling? (Y/N)**
Arsenic	7440-38-2	2.0E-04	4.52E-05	1.5E-06	Yes
Benzene	71-43-2	2.1E-03	4.74E-04	8.0E-04	No
Beryllium	7440-41-7	1.2E-05	2.71E-06	2.8E-05	No
Cadmium	7440-43-9	1.1E-03	2.48E-04	3.7E-06	Yes
Chromium VI	7440-47-3	0.0E+00	0.00E+00	5.6E-07	No
Formaldehyde	50-00-0	7.5E-02	1.69E-02	5.1E-04	Yes
Nickel	7440-02-0	2.1E-03	4.74E-04	2.7E-05	Yes
Benzo(a)pyrene	50-32-8	1.2E-06	2.71E-07	2.0E-06	No
Benz(a)anthracene	56-55-3	1.8E-06	4.06E-07	NA	No
Benzo(b)fluoranthene	205-82-3	1.8E-06	4.06E-07	NA	No
Benzo(k)fluoranthene	205-99-2	1.8E-06	4.06E-07	NA	No
Chrysene	218-01-9	1.8E-06	4.06E-07	NA	No
Dibenzo(a,h)anthracene	53-70-3	1.2E-06	2.71E-07	NA	No
Indeno(1,2,3-cd)pyrene	193-39-5	1.8E-06	4.06E-07	NA	No
Total PAHs		1.1E-05	2.57E-06	2.00E-06	Yes

5.0 AMBIENT AIR QUALITY ANALYSIS

Although the net emission change in particulate emissions is a decrease, Idaho DEQ asked to verify that the significance impact level (SIL) for 24-hr and annual $PM_{2.5}$ was not exceeded. All emissions units that have an increasing or decreasing emission rate were modeled. These units include the drum dryers (#1-#6), snifters (#1-#6), nuisance baghouse, and bubble sheet dryers (#1-#2).

5.1 Emission Rate Updates

- **Drum Dryers**
  - Previously permitted rate: 0.82 lb/hr, 3.47 T/yr
  - New rate as determined by performance test: 0.63 lb/hr, 2.68 T/yr
  - Dryers #1-6 modeled with a reduction rate of -0.19 lb/hr, -0.8094 T/yr

- **Snifter stacks**
  - Previously permitted rate: 0.01 lb/hr, 0.0426 T/yr
  - New rate as determined by performance test: 0.02 lb/hr, 0.0852 T/yr
  - Snifters #1-6 modeled with an increase rate of 0.01 lb/hr, 0.0426 T/yr

- **Nuisance Baghouse**
  - Previous emissions were routed inside a building
  - New rate as determined by manufacturer guarantee as previously submitted to IDEQ: 0.0003 lb/hr, 0.001 T/yr
  - Baghouse modeled with an increase rate of 0.0003 lb/hr, 0.001 T/yr

- **Bubble Sheet Dryers**
  - Previous permitted rate: 0.35 lb/hr, 1.491 T/yr
  - New rate for Line #1 dryer: 0.71 lb/hr, 3.0246 T/yr
  - New rate for Line #2 dryer: 0.00 lb/hr, 0.00 T/yr
  - Dryer #1 modeled as an increase rate of 0.36 lb/hr, 1.5336 T/yr
  - Dryer #2 modeled with a reduction rate of -0.35 lb/hr -1.491 T/yr

5.2 New Ambient Air Boundary

Gem State leased approximately 1.4 acres to the northeast of the existing property (see Appendix A). The addition has been included into the SIL analysis.

5.3 **Receptor Network**

The facility is located in a light industrial area in Burley, ID. The property covers approximately 8.62 acres. Consistent with IDEQ guidance the ambient air boundary used in this analysis is the property boundary, which also serves as the public access boundary.

Receptor density was set to a spacing of 25 meters along the ambient air boundary, 50 meters for the first 100 meters past the boundary, then receptors were set at a density of one per 100 meters out to 500 meters away from the property boundary, 250 meters out to 2,000 meters from the ambient air boundary, and 500 meters out to 5 kilometers past the ambient air boundary. The receptor network ensures that the analysis meets or exceeds EPA receptor network requirements and captures the maximum impact from the facility. The grid spacing around the maximum was somewhat coarse. Thus, several more receptors were added to confirm that the most accurate maximum was established. The receptors were added randomly and Aermap was run to establish an appropriate terrain elevation.

5.4 **Elevation Data**

All source base and receptor elevations were calculated from USGS NED data using the Bee-Line BEEST preprocessing system.

5.5 **Meteorological Data**

Preprocessed AERMOD ready meteorological files were provided upon request from Darrin Mehr of IDEQ. The data files cover the years 2000 through 2004. The data presented by IDEQ is model-ready, and was used without alteration or processing.

5.6 **Land Use Classification**

AERMOD includes rural and urban algorithm options. These options affect the wind speed profile, dispersion rates, and mixing-height formula used in calculating ground-level pollutant concentrations. A protocol was developed by USEPA to classify an area as either rural or urban for dispersion modeling purposes. The classification is based on average heat flux, land use, or population density within a three-km radius from the plant site. Of these techniques, the USEPA has specified that land use is the most definitive criterion (USEPA, 1987). The urban/rural classification scheme based on land use is as follows:

> *The land use within the total area, A_0, circumscribed by a 3-km circle about the source, is classified using the meteorological land use typing scheme proposed by Auer (1978). The classification scheme requires that more than 50% of the area, A0, be from the*

following land use types in order to be considered urban for dispersion modeling purposes: heavy industrial (I1); light-moderate industrial (I2); commercial (C1); single-family compact residential (R2); and multi-family compact residential (R3). Otherwise, the use of rural dispersion coefficients is appropriate.

The Gem State facility is located in a light industrial area, in Heyburn, ID. Although the immediate vicinity of the site is industrial and commercial, site and map reconnaissance showed that the area A_0 within a 3-km circle of the source is below the 50% urban land use criteria necessary for use of urban dispersion coefficients. Rural dispersion coefficients were therefore used in the air quality dispersion modeling.

5.7 **Stack Parameters**

Constructed stack heights shall be no lower than the stack heights specified in Appendix H. The majority of stack parameters were validated in June 2012 and accepted by IDEQ. Bubble sheet dryer #2 was modeled using original parameters as determined during the previous permitting action. The stack height of the of the nuisance dust collector is 40 feet 1 inch from ground level and 16 inches in diameter.

5.8 **Significance Analysis Results ($PM_{2.5}$)**

The intent of this analysis is to maximize the throughput of bubble sheet dryer #1 while remaining below the $PM_{2.5}$ SILs of 1.2 and 0.3 µg/m^3 for 24-hr and annual, respectively. While there is a net decrease in total emissions, it was necessary to show that the changes of emissions and associated geographic location do not exceed the SIL.

SIL analysis requires that the maximum 1st high value be used for comparison. The reduction of emissions from the Bubble Sheet dryer #2 and the drum dryers allowed for the increase of emissions from the Bubble Sheet Dryer #1, while maintaining facility ambient impacts below the SIL. The contribution of the Bubble Sheet dryers is 1.84 µg/m^3. The snifters contribution is 0.83 µg/m^3, and the nuisance baghouse is 0.02 µg/m^3. However, the drum dryers contribute a negative concentration resulting in an aggregated total concentration of 1.18 µg/m^3. As a result, the proposed changes are below the $PM_{2.5}$ 24-hr SIL. Similarly, the annual total concentration for all sources is 0.01 µg/m^3 which is less than the annual $PM_{2.5}$ SIL, 0.3 µg/m^3.

Using the calculation methodology defined in Permit Condition 19, the new proposed daily throughput for Bubble Sheet Dryer #1 is calculated to be 79,200 pounds or 39.6 tons.

5.9 Facility-wide Verification (PM_{10})

It was necessary to show that the stack parameter changes made and verified by IDEQ in June 2012 and emission rate updates did not cause a NAAQS violation for 24-hr PM10. All previously permitted units were included with the updated ambient air boundary (see Appendix A). The drum dryers, snifters, bubble sheet #1, exhaust stacks, boilers and silo vent baghouse were verified and the parameters were adjusted from the original submittal where appropriate. Also, all emission rate changes described in Section 5.1were updated. No other units had the emission rates updated.

The 6th high modeled value maximum was 60.8 µg/m^3. A background of 76 µg/m^3 representative of Rupert data was used in the original submittal and has been applied here again for consistency purposes. Therefore, the overall impact from the updated Gem State modeling demonstration illustrated compliance with the 150 µg/m3 NAAQS. The impact is 91.2% of the standard. As a result, the proposed changes are appropriate and do not create an adverse impact to the surrounding ambient air.

5.10 NO_x and SO_x Discussion

The proposed project does not create a change in either NOx or SOx emissions. However, all the exhaust stack parameters from the AMUs were part of the June verification; as were the three permitted boilers. Because of the stack changes it was necessary to confirm that there were no substantial differences to the ambient impact previously modeled.

Originally, annual NO_2 was only at 51% of the NAAQS and no SO_2 modeling was required as nothing exceeded the modeling thresholds. However, since the previous permitting action, two new 1-hr standards have been promulgated. All fourteen exhaust points associated with the AMUs were originally modeled with a stack height of 35 feet from ground level. The updated verification included all stack heights greater than 35 feet ranging from 35.7 to 38.8 feet. Stack temperatures remained unchanged for all units. All but one changed exit velocity; the one that did actually increased which would allow for better dispersion than previously modeled. Lastly, the boilers remained with an identical stack temperature, exit velocity and stack diameter. The stack height was slightly increased from 60 feet to 60.79 feet.

Overall, the changes to the stack parameters were not substantial enough to warrant any major change to the ambient impacts expected from NOx and SOx. In fact, these verification parameters would have most likely improved the modeled results. Therefore, no verification runs were conducted for this project.

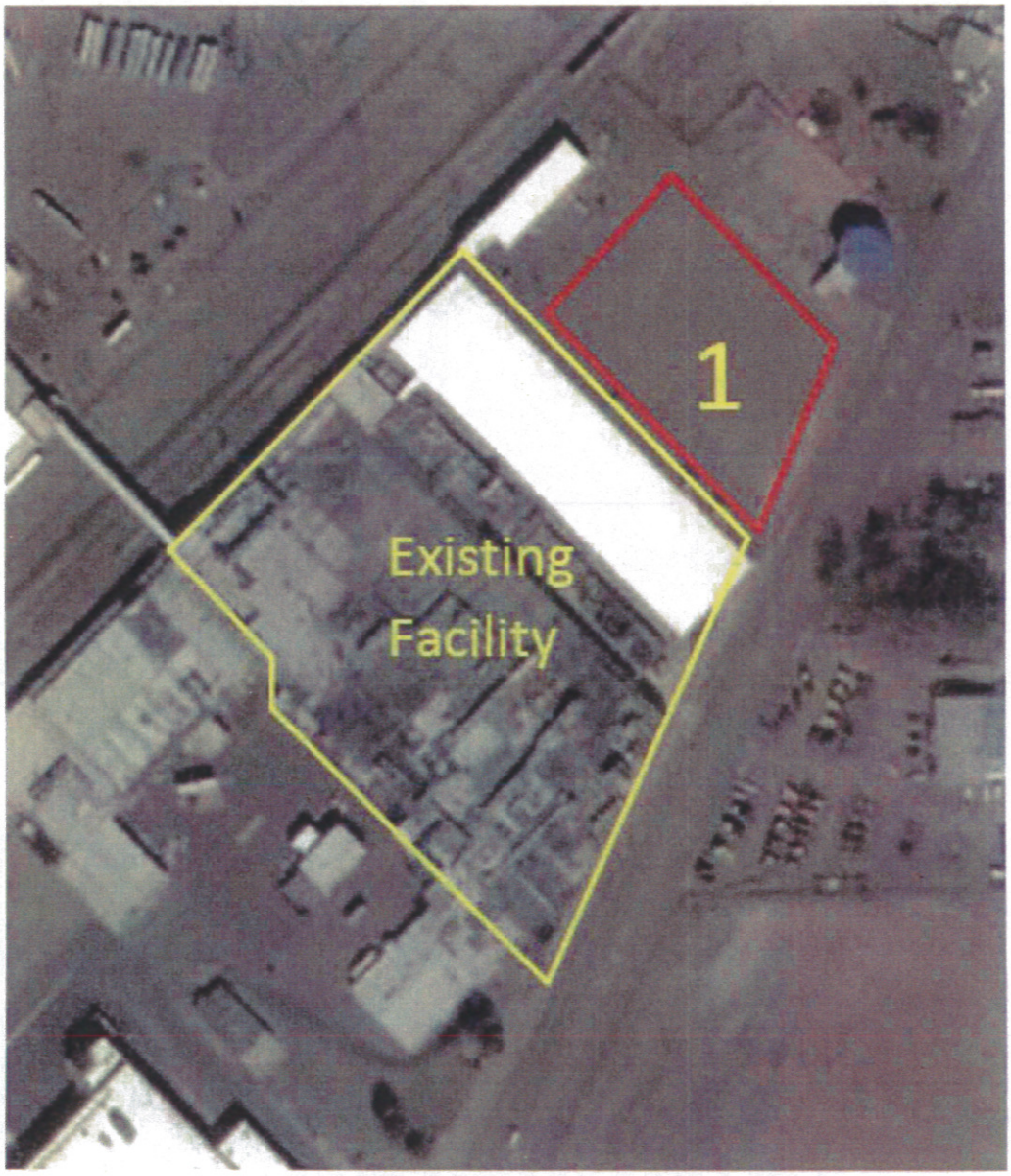
APPENDIX A

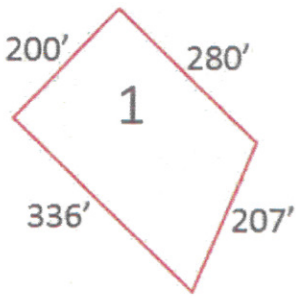
Site Location Map and Plot Plan

Gem State Potato Processing
Heyburn, ID

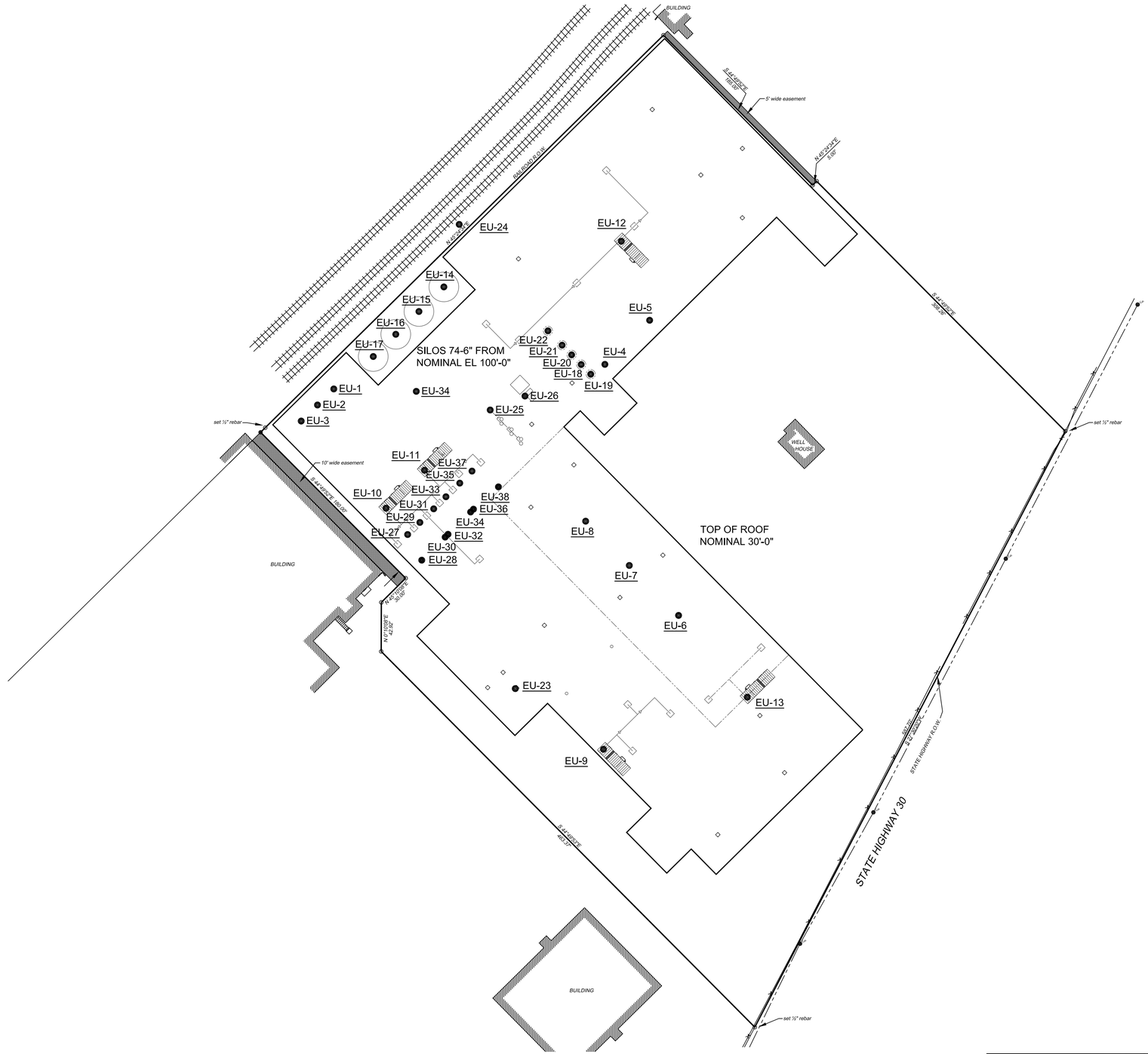
Figure 1 – Site Location

Exhibit A





Approximately 61,000 square feet or 1.4 acres



PLAN VIEW

SCALE 1" = 50'

LEGEND

- POWER LINE
- FENCE LINE
- LIGHT POLE
- EMMISION POINT
- (SD) - STORM DRAIN MANHOLE
- (SS) - SANITARY SEWER MANHOLE
- (FH) - FIRE HYDRANT
- (WV) - WATER VALVE
- (FM) - FIRE MAIN POST
- (TSR) - TELEPHONE SERVICE RISER

FACILITY

GEM STATE PROCESSING LLC.
951 HIGHWAY 30
HEYBURN, ID 83336

NOTICE
THIS PRINT IS LOANED EXPRESSLY UPON THE CONDITION THAT IT IS NOT TO BE USED DIRECTLY OR INDIRECTLY IN ANY MANNER DETRIMENTAL TO OUR INTERESTS, IT IS SUBJECT TO RETURN UPON DEMAND.

IDAHO STEEL PRODUCTS COMPANY
IDAHO FALLS, IDAHO, U.S.A.

TOLERANCES
UNLESS OTHERWISE SPECIFIED
FRACTIONAL.... ±1/32"
.00 DECIMAL... ±.01
.000 DECIMAL... ±.005
ANGLES..... ±.5°

SMOOTH ALL SHARP EDGES
RADIUS ALL CORNERS
DEBURR ALL HOLES
DO NOT SCALE DRAWINGS

IDAHOSTEEL
Food Processing Equipment

Designed and Manufactured by:
IDAHO STEEL PRODUCTS CO.
255 E. Anderson, Idaho Falls ID. 83401

TITLE: GEM STATE PROCESSING-PERMIT PLAN

DATE	SCALE	DRAWN BY	CHECKED BY
12/14/10	1"= 50'-0"	JTD	

CUSTOMER	WORK ORDER NO.	
GEM STATE PROCESSING LLC	10-10080	1

PLANT LOCATION	DRAWING NAME	REVISION
HEYBURN, ID	10-10080-A01-3	2

APPENDIX B

DEQ PTC Forms and Checklists

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline: 1-877-5PERMIT

General Information **Form GI**
Revision 7
6/29/12

Please see instructions on back page before filling out the form. All information is required. If information is missing, the application will not be processed.

Identification

1. Facility name: Gem State Processing, LLC

2. Existing facility identification number: 067-00038

☐ **Check if new facility (not yet operating)**

3. Brief project description: Revision to update emission factors of drum dryers, snifters bubble sheets dryers

Facility Information

4. Primary facility permitting contact name: Bill Schow
Contact type: Responsible official
Telephone number: 208-631-1680
E-mail: bill@gemstateprocessing.com

5. Alternate facility permitting contact name: Miguel Rementeria
Alternate contact type: Responsible official
Telephone number: 208-678-6436
E-mail: mrementeria@gemstateprocessing.com

6. Mailing address where permit will be sent (street/city/county/state/zip code): 951 Highway 30, Heyburn, Minidoka, idaho 83336

7. Physical address of permitted facility (if different than mailing address) (street/city/county/state/zip code): Same as above

8. Is the equipment portable? ☐ **Yes*** ☒ **No** ***If yes, complete and attach PERF; see instructions.**

9. NAICS codes: **Primary NAICS**: 311423 **Secondary NAICS**:

10. Brief business description and principal product produced: Producer of dehydrated potato flakes and other dehydrated potato products

11. Identify any adjacent or contiguous facility this company owns and/or operates: N/A

12. Specify type of application ☒ **Permit to construct (PTC); application fee of $1,000 required. See instructions.**

☐ **Tier I permit** ☐ **Tier II permit** ☐ **Tier II/Permit to construct**

For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.

☐ **Co-process Tier I modification and PTC** ☐ **Incorporate PTC at the time of Tier I renewal** ☐ **Administratively amend the Tier I permit to incorporate the PTC upon applicant's request (IDAPA 58.01.01.209.05.a, b, or c)**

Certification

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

13. Responsible official's name: Bill Schow
Official's title: General Manager
Official's address: 951 Highway 30, Heyburn, Idaho 83336
Telephone number: 208-631-1680
E-mail: bill@gemstateprocessing.com
Official's signature: Bill Schow
Date: November 7, 2012

☒ **14. Check here to indicate that you want to review the draft permit before final issuance.**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER			
1. Company Name	Gem State Processing, LLC		
2. Facility Name	Gem State – Heyburn Facility	3. Facility ID No.	067-00038
4. Brief Project Description - One sentence or less	Revision of permit for potato processing facility in Heyburn, ID as required by enforcement action		

PERMIT APPLICATION TYPE

5. ☐ New Source ☐ New Source at Existing Facility ☐ PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c
☐ Unpermitted Existing Source ☐ Facility Emissions Cap ☒ Modify Existing Source: Permit No.: P-2010.0183 Date Issued: 4/1/11
☒ Required by Enforcement Action: Case No.: E-2011.0012

6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	Form CSPTC – Cover Sheet		☐
☒	☐	Form GI – Facility Information		☐
☒	☐	Form EU0 – Emissions Units General		☐
☐	☒	Form EU1– Industrial Engine Information	Please specify number of EU1s attached: ____	☐
☐	☒	Form EU2– Nonmetallic Mineral Processing Plants	Please specify number of EU2s attached: ____	☐
☐	☒	Form EU3– Spray Paint Booth Information	Please specify number of EU3s attached: ____	☐
☐	☒	Form EU4– Cooling Tower Information	Please specify number of EU3s attached: ____	☐
☐	☒	Form EU5 – Boiler Information	Please specify number of EU4s attached: 3	☐
☐	☒	Form CBP– Concrete Batch Plant	Please specify number of CBPs attached: ____	☐
☐	☒	Form HMAP – Hot Mix Asphalt Plant	Please specify number of HMAPs attached: ____	☐
☐	☒	PERF – Portable Equipment Relocation Form		☐
☐	☒	Form AO – Afterburner/Oxidizer		☐
☐	☒	Form CA – Carbon Adsorber		☐
☐	☒	Form CYS – Cyclone Separator		☐
☐	☒	Form ESP – Electrostatic Precipitator		☐
☐	☐	Form BCE– Baghouses Control Equipment		☐
☐	☒	Form SCE– Scrubbers Control Equipment		☐
☐	☒	Form VSCE – Venturi Scrubber Control Equipment		☐
☐	☒	Form CAM – Compliance Assurance Monitoring		☐
☒	☐	Forms EI-CP1 - EI-CP4– Emissions Inventory– criteria pollutants	(Excel workbook, all 4 worksheets)	☐
☒	☐	PP – Plot Plan		☐
☒	☐	Forms MI1 – MI4 – Modeling	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

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Emissions Unit - General **Form EU0**
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08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	REYCO AMU #1
6.	EU ID Number:	EU-9
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	REYCO
9.	Model:	GASPAC 850
10..	Maximum Capacity:	9.0 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	REYCO AIR MAKEUP UNIT (AMU) #2
6.	EU ID Number:	EU-10
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	REYCO
9.	Model:	GASPAC 1000
10..	Maximum Capacity:	9.0 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	REYCO AIR MAKEUP UNIT (AMU) #3
6.	EU ID Number:	EU-11
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	REYCO
9.	Model:	GASPAC 1000
10..	Maximum Capacity:	9.0 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	REYCO AIR MAKEUP UNIT (AMU) #4
6.	EU ID Number:	EU-12
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	REYCO
9.	Model:	GASPAC 1250
10..	Maximum Capacity:	10.0 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	REYCO AIR MAKEUP UNIT (AMU) #5
6.	EU ID Number:	EU-13
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	REYCO
9.	Model:	GASPAC 1000
10..	Maximum Capacity:	9.0 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	067-00038

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	BOILER #1
6.	EU ID Number:	EU-1
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	JOHNSTON BOILER COMPANY
9.	Model:	PFTA 1200-4
10..	Maximum Capacity:	49.13 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Low NOx burner #1		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Johnston Boiler Company		
18. ID(s) of Emission Unit Controlled:	EU-1		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency				0.036 lb/MMBtu		0.037 lb/MMBtu

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	067-00038

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	BOILER #2
6.	EU ID Number:	EU-2
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	JOHNSTON BOILER COMPANY
9.	Model:	PFTA 1200-4
10..	Maximum Capacity:	49.13 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Low NOx burner #2		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Johnston Boiler Company		
18. ID(s) of Emission Unit Controlled:	EU-2		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency				0.036 lb/MMBtu		0.037 lb/MMBtu

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	067-00038
4. Brief Project Description:	Modification of Current PTC	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	BOILER #3
6.	EU ID Number:	EU-3
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	JOHNSTON BOILER COMPANY
9.	Model:	PFTA 1600-4
10..	Maximum Capacity:	65.43 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Low NOx burner #3		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Johnston Boiler Company		
18. ID(s) of Emission Unit Controlled:	EU-3		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency				0.036 lb/MMBtu		0.037 lb/MMBtu

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	BUBBLE SHEET DRYER #1
6.	EU ID Number:	EU-4
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	Idaho Steel
9.	Model:	TBD
10..	Maximum Capacity:	6.0 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification to Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	BUBBLE SHEET DRYER #2
6.	EU ID Number:	EU-5
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	Idaho Steel
9.	Model:	TBD
10..	Maximum Capacity:	6.0 MMBTU/HR
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER DRUM FAN HOOD #1
6.	EU ID Number:	EU-27
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	ESTIMATED 2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	I
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☒ Material Usage Limit(s):	2250 lb/hr dry
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

DEQ AIR QUALITY PROGRAM
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Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER DRUM FAN HOOD #2
6.	EU ID Number:	EU-29
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	I
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☒ Material Usage Limit(s):	2250 lb/hr dry
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER DRUM FAN HOOD #3
6.	EU ID Number:	EU-31
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	I
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☒ Material Usage Limit(s):	2250 lb/hr dry
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER DRUM FAN HOOD #4
6.	EU ID Number:	EU-33
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	I
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☒ Material Usage Limit(s):	2250 lb/hr dry
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER DRUM FAN HOOD #5
6.	EU ID Number:	EU-35
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	ESTIMATED 2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	I
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☒ Material Usage Limit(s):	2250 lb/hr dry
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER DRUM FAN HOOD #6
6.	EU ID Number:	EU-37
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	I
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☒ Material Usage Limit(s):	2250 lb/hr dry
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	NUISANCE DUST COLLECTOR
6.	EU ID Number:	EU-26
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	MC4-64
10..	Maximum Capacity:	30,000 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	North Monsen Fabric Filter		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	North Monsen/F15214-196		
18. ID(s) of Emission Unit Controlled:	EU-26		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99.9%	99.9%				

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	PNEUMATIC CONVEYING LINE BAGHOUSE
6.	EU ID Number:	EU-25
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	FRC-R-25-102
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	Plant Reciever BAGHOUSE #1
6.	EU ID Number:	EU-19
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-16-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	PLANT RECIEVER BAGHOUSE #2
6.	EU ID Number:	EU-20
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-16-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	
4. Brief Project Description:	Modification of Current PTC	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	PLANT RECIEVER BAGHOUSE #3
6.	EU ID Number:	EU-21
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-16-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.03 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification to Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	PLANT RECIEVER BAGHOUSE #4
6.	EU ID Number:	EU-22
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-16-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	RAIL LOAD BAGHOUSE
6.	EU ID Number:	EU-24
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	FRC-R-25-175
10..	Maximum Capacity:	850 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification to Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	REJECT SILO BAGHOUSE
6.	EU ID Number:	EU-18
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	FRC-R-25-102
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	TO COMPLY WITH AMBIENT IMPACT STANDARDS

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
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4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	SILO BIN VENT BAGHOUSE #1
6.	EU ID Number:	EU-14
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-25-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	TO COMPLY WITH AMBIENT IMPACT STANDARDS

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	SILO BIN VENT BAGHOUSE #2
6.	EU ID Number:	EU-15
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-25-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	TO COMPLY WITH AMBIENT IMPACT STANDARDS

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IDENTIFICATION

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4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	SILO BIN VENT BAGHOUSE #3
6.	EU ID Number:	EU-16
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-25-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	TO COMPLY WITH AMBIENT IMPACT STANDARDS

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	modification to Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	SILO BIN VENT BAGHOUSE #4
6.	EU ID Number:	EU-17
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-25-58
10..	Maximum Capacity:	450 SCFM
11.	Date of Construction:	ESTIMATED 2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.03 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	TO COMPLY WITH AMBIENT IMPACT STANDARDS

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER SNIFTER FAN DRUM #1
6.	EU ID Number:	EU-28
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	ESTIMATED 2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Snifter Fan Collection System #1		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Idaho Steel		
18. ID(s) of Emission Unit Controlled:	EU-28		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	80%	80%				

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
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4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER SNIFTER FAN DRUM #2
6.	EU ID Number:	EU-30
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Snifter Fan Collection System #2		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Idaho Steel		
18. ID(s) of Emission Unit Controlled:	EU-30		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	80%	80%				

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER SNIFTER FAN DRUM #3
6.	EU ID Number:	EU-32
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Snifter Fan Collection System #3		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Idaho Steel		
18. ID(s) of Emission Unit Controlled:	EU-32		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	80%	80%				

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

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Emissions Unit - General **Form EU0**
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IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
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4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER SNIFTER FAN DRUM #4
6.	EU ID Number:	EU-34
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	ESTIMATED 2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Snifter Fan Collection System #4		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Idaho Steel		
18. ID(s) of Emission Unit Controlled:	EU-34		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	80%	80%				

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER SNIFTER FAN DRUM #5
6.	EU ID Number:	EU-36
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Snifter Fan Collection System #5		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Idaho Steel		
18. ID(s) of Emission Unit Controlled:	EU-36		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	80%	80%				

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Construction and operation of a new potato processing facility in Heyburn, ID

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	DRUM DRYER SNIFTER FAN DRUM #6
6.	EU ID Number:	EU-38
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	IDAHO STEEL
9.	Model:	TBD
10..	Maximum Capacity:	2250 LB/HR DRY
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Snifter Fan Collection System #6		
15. Date of Installation:	2/1/2011	16. Date of Modification (if any):	NA
17. Manufacturer and Model Number:	Idaho Steel		
18. ID(s) of Emission Unit Controlled:	EU-38		
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	80%	80%				

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☐ Other:	
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
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Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
Gem State Processing, LLC	Gem State -Heyburn Facility	038-00067

4. Brief Project Description:	Modification of Current PTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	TRUCK LOADOUT BAGHOUSE
6.	EU ID Number:	EU-23
7.	EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	FILTAIR
9.	Model:	BVB-28-58
10..	Maximum Capacity:	850 SCFM
11.	Date of Construction:	2/1/2011
12.	Date of Modification (if any):	NA
13.	Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	
15. Date of Installation:	16. Date of Modification (if any):
17. Manufacturer and Model Number:	
18. ID(s) of Emission Unit Controlled:	
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency						

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	8520 HRS/YEAR
23.	Maximum Operation:	8520 HRS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☒ Operation Hour Limit(s):	8520 hrs/year
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	0.007 GRAIN/SCF
25.	Rationale for Requesting the Limit(s):	UNCHANGED FROM PREVIOUS PERMITTING ACTION

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:	Gem State Processing, LLC
Facility Name:	Gem State - Heyburn Facility
Facility ID No.:	067-00038
Brief Project Description:	Construction and operation of a new potato processing facility in Heyburn, ID

SUMMARY OF AIR IMPACT ANALYSIS RESULTS - CRITERIA POLLUTANTS

		1.		2.	3.	4.		5.
Criteria Pollutants	**Averaging Period**	**Significant Impact Analysis Results (µg/m3)**	**Significant Contribution Level (µg/m3)**	**Full Impact Analysis Results (µg/m3)**	**Background Concentration (µg/m3)**	**Total Ambient Impact (µg/m3)**	**NAAQS (µg/m3)**	**Percent of NAAQS**
PM_{10}	24-hour	n/a	5	n/a	76.00	135.69	150	90%
	Annual	n/a	1	n/a			50	
$PM_{2.5}$	24-hour	1.14	1.2	n/a			35	
	Annual	0.01	0.3	n/a			15	
SO_2	3-hr	n/a	25	n/a			1300	
	24-hr	n/a	5	n/a	`		365	
	Annual	n/a	1	n/a			80	
NO_2	Annual	n/a	1	n/a			100	
CO	1-hr	n/a	2000	n/a			10000	
	8-hr	n/a	500	n/a			40000	

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION
Revision 3
3/27/2007

Please see instructions on page 2 before filling out the form.

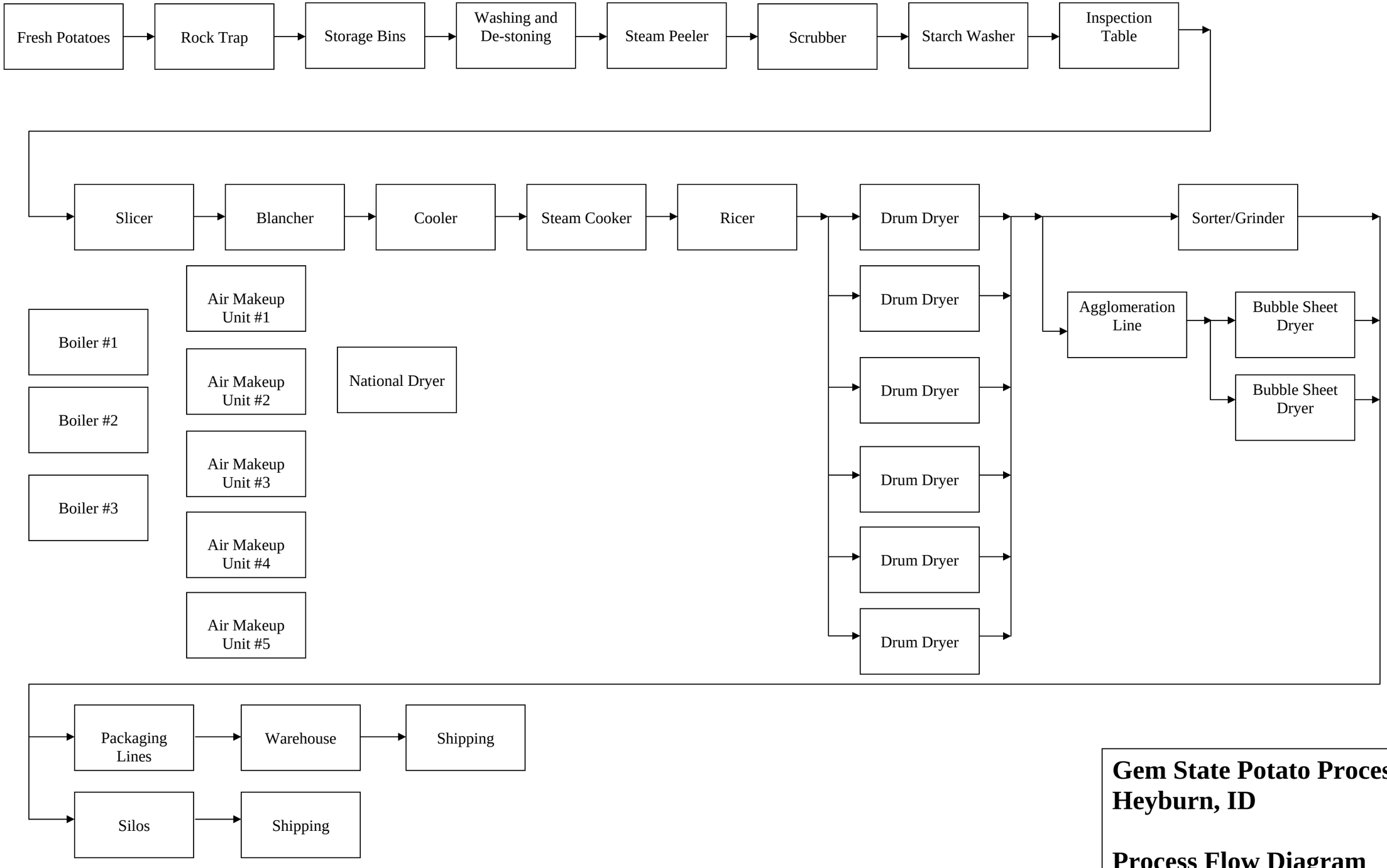
Company Name:	Gem State Processing, LLC
Facility Name:	Gem State - Heyburn Facility
Facility ID No.:	067-00038
Brief Project Description:	Revision to permit for new potato processing facility in Heyburn, ID

POINT SOURCE STACK PARAMETERS

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	**Stack ID**	**UTM Easting (m)**	**UTM Northing (m)**	**Base Elevation (m)**	**Stack Height (ft)**	**Modeled Diameter (ft)**	**Stack Exit Temperature (F)**	**Stack Exit Flowrate (acfm)**	**Stack Exit Velocity (ft/s)**	**Stack orientation (e.g., horizontal, rain cap)**
Point Source(s)										
Drum Fan Hood #1	DFH#1	273,376.36	4,714,652.36	1,266.36	60.21	3.17	119.41	30,319.31	64.16	vertical
Drum Fan Hood #2	DFH#2	273,380.21	4,714,655.43	1,266.36	60.21	3.17	119.41	30,319.31	64.16	vertical
Drum Fan Hood #3	DFH#3	273,384.17	4,714,659.20	1,266.33	60.21	3.17	119.41	30,319.31	64.16	vertical
Drum Fan Hood #4	DFH#4	273,386.62	4,714,662.06	1,266.30	60.21	3.17	119.41	30,319.31	64.16	vertical
Drum Fan Hood #5	DFH#5	273,390.23	4,714,666.66	1,266.26	60.21	3.17	119.41	30,319.31	64.16	vertical
Drum Fan Hood #6	DFH#6	273,394.16	4,714,669.25	1,266.29	60.21	3.17	119.41	30,319.31	64.16	vertical
Snifter Fan Drum #1	SFD#1	273,380.44	4,714,645.65	1,266.36	55.00	1.48	111.00	5,508.88	53.04	vertical
Snifter Fan Drum #2	SFD#2	273,386.98	4,714,652.44	1,266.36	55.00	1.48	111.00	5,508.88	53.04	vertical
Snifter Fan Drum #3	SFD#3	273,387.72	4,714,653.74	1,266.26	55.00	1.48	111.00	5,508.88	53.04	vertical
Snifter Fan Drum #4	SFD#4	273,392.75	4,714,658.29	1,266.33	55.00	1.48	111.00	5,508.88	53.04	vertical
Snifter Fan Drum #5	SFD#5	273,390.23	4,714,660.29	1,266.31	55.00	1.48	111.00	5,508.88	53.04	vertical
Snifter Fan Drum #6	SFD#6	273,394.16	4,714,665.52	1,266.32	55.00	1.48	111.00	5,508.88	53.04	vertical
Bubble Sheet Dryer #1	PRE#1	273,428.86	4,714,698.39	1,266.33	65.00	2.77	131.00	20,023.00	55.50	vertical
Bubble Sheet Dryer #2	PRE#2	273,441.58	4,714,709.33	1,266.26	65.00	3.17	150.00	30,125.56	63.75	vertical
Nuisance Dust Collector Baghouse	BH1	273,407.91	4,714,653.74	1,266.26	30.50	3.50	100.00	5,997.81	10.39	vertical
Exhaust #1	EX1	273,476.90	4,714,588.63	1,268.00	38.80	3.67	80.01	24,225.44	38.17	vertical
Exhaust #2	EX2	273,470.83	4,714,603.84	1,268.00	38.80	3.67	80.01	24,225.44	38.17	vertical
Exhaust #3	EX3	273,458.51	4,714,572.32	1,268.00	38.80	3.67	80.01	24,225.44	38.17	vertical
Exhaust #4	EX4	273,397.28	4,714,611.26	1,268.00	38.80	2.50	80.01	7,139.27	24.24	vertical
Exhaust #5	EX5	273,401.72	4,714,615.25	1,268.00	38.00	2.50	80.01	7,139.27	24.24	vertical
Exhaust #6	EX6	273,412.56	4,714,628.19	1,268.00	38.00	3.67	80.01	24,225.44	38.17	vertical
Exhaust #7	EX7	237,380.00	4,714,688.00	1,266.35	37.70	2.00	80.01	4,000.00	21.22	vertical
Exhaust #8	EX8	273,410.27	4,714,681.28	1,266.26	37.90	2.50	80.01	7,000.00	23.77	vertical
Exhaust #9	EX9	273,420.46	4,714,692.51	1,266.30	37.90	2.50	80.01	7,000.00	23.77	vertical
Exhaust #10	EX10	273,406.12	4,714,726.58	1,266.26	35.90	4.00	80.01	17,281.27	22.92	vertical
Exhaust #11	EX11	273,442.24	4,714,765.36	1,266.17	35.80	4.00	80.01	17,281.27	22.92	vertical
Exhaust #12	EX12	273,466.10	4,714,755.26	1,266.15	35.70	4.00	80.01	17,281.27	22.92	vertical
Exhaust #13	EX13	273,454.53	4,714,749.07	1,266.16	36.10	4.00	80.01	18,563.04	24.62	vertical
Exhaust #14	EX14	273,465.36	4,714,737.34	1,266.08	36.10	4.00	80.01	18,563.04	24.62	vertical
Boiler #1	BO1	273,355.43	4,714,691.04	1,266.21	60.79	3.00	315.00	14,911.88	35.16	vertical
Boiler #2	BO2	273,351.14	4,714,686.74	1,266.16	60.79	3.00	315.00	14,911.88	35.16	vertical
Boiler #3	BO3	273,346.56	4,714,682.29	1,266.17	60.79	3.00	315.00	14,911.88	35.16	vertical
Pneumatic Conveying	PRE3	273,399.06	471,685.54	1,266.32	60.00	1.67	100.00	6,000.00	45.87	vertical
Silo Bin Vent Baghouse	SILOBIN1	273,384.94	4,714,718.11	1,266.27	81.42	0.34	70.00	0.01	0.00	vertical
Rail load Baghouse	RAILLOAD	273,386.50	4,714,725.00	1,266.26	41.80	0.00	70.00		0.00	vertical

APPENDIX C

Process Flow Diagram



Gem State Potato Processing
Heyburn, ID

Process Flow Diagram

APPENDIX D

Manufacturer Information

From:	Shannon Manoulian
To:	Eric Clark
Subject:	FW: Revised Dust Collector Performance - Gem State Processing - Baghouse Information Request
Date:	Friday, October 26, 2012 4:11:04 PM

From: Bill Schow [mailto:bill@gemstateprocessing.com]
Sent: Friday, January 21, 2011 12:13 PM
To: Shannon Manoulian; 'Jeff Denekers'
Subject: FW: Revised Dust Collector Performance - Gem State Processing - Baghouse Information Request

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From: Kent Monsen [mailto:kent@northmonsen.com]
Sent: Friday, January 21, 2011 10:53 AM
To: 'Bill Schow'
Subject: Revised Dust Collector Performance - Gem State Processing - Baghouse Information Request

NORTH-MONSEN COMPANY

P.O. Box 174 (84110) – 252 Orchard Place – Salt Lake City, UT 84110
Phone (801) 322-1343 – Fax (801) 322-1516
Email kent@northmonsen.com

January 21, 2010

Bill:

We are pleased to submit the following revised performance of the dust collectors being furnished for your project:

Silo Bin Vents

- (4) Model BV8-25-50 Premier Pneumatics (only one operating at time)
    1. Capacity 1000 CFM each
    2. Number of bags 25 @ 58" long 5" dia 175 sq ft
    3. filter media 16 oz polyester felt
    4. Collection efficiency .007 grains per DSCF
    5. Filter ration 5.7 CFM per sq ft of filter media

Rail Load out Vent and Truck Load out Vent

- (2) Model FRC-24-58 Premier
    1. Capacity 1000 CFM each
    2. number of bags 24 @ 5" dia X 58" long 175 sq ft
    3. Filter Media 16 oz polyester felt
    4. Collection efficiency .007 grains per DSCF
    5. Filter ration 5.7 CFM per square ft of filter media

Super Sack/Tote Pacing Receivers and Bag Packing Receiver

- (2) Model FRC-45-36 Filter Receiver Premier
  1. Capacity 1000 CFM each
  2. number of bags 45 @ 36" long 5" dia 185 sq ft
  3. filter media 16 oz polyester felt
  4. Collection efficiency .007 grains/DSCF
  5. Filter ratio 5.4 CFM per square foot of filter media

Multi Purpose Filter Receiver and off spec Receiver

- (2) Model FRC 24-58
  1. Capacity 1200 CFM ea
  2. number of bags 24 @ 5" dia X 58" long 175 sq ft
  3. Filter Media 16 oz polyester felt
  4. Collection efficiency .007 grains per DSCF
  5. Filter ratio 6.8 CFM per sq ft of filter media

Due to the height limitation of the filter receivers of the super sack/tote filling packing receivers the model number may change but the capacity and operating conditions would remain the same.

Plant Dust Collection System

- (1) Model 100S-10-20 Mikro Pulsaire Collector
  1. Capacity 6,000 CFM
  2. Number of bags 100 @ 4 1/2" dia X 10' long 1180 sq ft
  3. Filter Media 16 oz polyester felt
  4. Collection efficiency .007 grains per DSCF
  5. Filter Ratio 5 CFM per sq ft of filter media

We trust this gives you the information you require, but if you need any additional information, please give us a call.

Regards,

Kent Monsen
North Monsen Company
252 Orchard Place
Salt Lake City UT 84101
Phone: 801 - 322-1343
Fax: 801 - 322-1516

From: Bill Schow [mailto:bill@gemstateprocessing.com]
Sent: Wednesday, January 19, 2011 3:55 PM

To: 'Kent Monsen'
Subject: Gem State Processing - Baghouse Information Request

Kent,

Could you e-mail me the operating parameters/specifications for the baghouse/filter manufacturer (things such as measurement of pressure drop or other parameters that ensure that the baghouse will meet the 0.03 gr/dscf emission rate that they say they will).

1. Pneumatic conveying line baghouse
2. Nuisance dust collector baghouse
3. Silo Bin Vent baghouses #1-4
4. Reject silo baghouse
5. Plant receiver baghouses #1-4
6. Truck loadout baghouse
7. Rail load baghouse

Thanks,

William F. "Bill" Schow
Bill
General Manager

Gem State Processing, LLC
951 Highway 30
Heyburn, Idaho 83336
Cell 208-631-1680
Fax 208-679-4001
e-mail: bill@gemstateprocessing.com

APPENDIX E

Emissions Inventory

IDEQ PTC Forms
Facility Wide Potential to Emit Emission Inventory

Table 1. POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS

Emissions Unit	EU ID #	NSR Pollutant[a]							
		PM	PM-10	PM2.5	CO	Pb	NOx	VOC	SO2
		T/yr[b]	T/yr[b]	T/yr[b]	T/yr[b]	T/yr[b]	T/yr[b]	T/yr[b]	T/yr[b]
Point Sources									
Boiler #1 (1200 hp)	EU -1	0.21	0.21	0.21	8.25	1.03E-04	7.42	0.82	0.11
Boiler #2 (1200 hp)	EU -2	0.21	0.21	0.21	8.25	1.03E-04	7.42	0.82	0.11
Boiler #3 (1600 hp)	EU -3	0.27	0.27	0.27	11.00	1.37E-04	9.90	1.10	0.15
Bubble Sheet Dryer #1	EU -4	3.21	3.21	3.21	2.105	1.25E-05	2.51	0.14	0.02
Bubble Sheet Dryer #2	EU -5	0.19	0.19	0.19	2.105	1.25E-05	2.51	0.14	0.02
Reyco AMU #1 850	EU -9	0.18	0.18	0.18	1.953	1.16E-05	2.33	0.13	0.01
Reyco AMU #2 1000	EU -10	0.18	0.18	0.18	1.953	1.16E-05	2.33	0.13	0.01
Reyco AMU #3 1000	EU -11	0.18	0.18	0.18	1.953	1.16E-05	2.33	0.13	0.01
Reyco AMU #4 1250	EU -12	0.20	0.20	0.20	2.170	1.29E-05	2.58	0.14	0.02
Silo Bin Vent Baghouse #1	EU -14	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Silo Bin Vent Baghouse #2	EU -15	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Silo Bin Vent Baghouse #3	EU -16	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Silo Bin Vent Baghouse #4	EU -17	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Plant Reciever Baghouse #1	EU -19	0.31	0.31	0.31	n/a	n/a	n/a	n/a	n/a
Plant Reciever Baghouse #2	EU -20	0.31	0.31	0.31	n/a	n/a	n/a	n/a	n/a
Plant Reciever Baghouse #3	EU -21	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Plant Reciever Baghouse #4	EU -22	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Truck Loadout Baghouse	EU -23	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Rail Load Baghouse	EU -24	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Pneumatic Conveying Line	EU -25	0.26	0.26	0.26	n/a	n/a	n/a	n/a	n/a
Nuisance Dust Collector	EU -26	0.001	0.001	0.001	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #1	EU -27	2.68	2.68	2.68	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #1	EU -28	0.0852	0.0852	0.0852	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #2	EU -29	2.68	2.68	2.68	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #2	EU -30	0.0852	0.0852	0.0852	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #3	EU -31	2.68	2.68	2.68	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #3	EU -32	0.0852	0.0852	0.0852	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #4	EU -33	2.68	2.68	2.68	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #4	EU -34	0.0852	0.0852	0.0852	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #5	EU -35	2.68	2.68	2.68	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #5	EU -36	0.0852	0.0852	0.0852	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #6	EU -37	2.68	2.68	2.68	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #6	EU -38	0.0852	0.0852	0.0852	n/a	n/a	n/a	n/a	n/a
Totals*		**24.35**	**24.35**	**24.35**	**39.73**	**0.00**	**39.31**	**3.55**	**0.47**

a) NSR Regulated air Pollutants are defined[1] as: Particulate Matter (PM, PM-10, PM-2.5), Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone (VOC), Sulfur Dioxide, all pollutants regulated by NSPS (40 CFR 60)(i.e. TRS, fluoride, sulfuric acid mist) & Class I & Class II Ozone Depleting Substances (40 CFR 82)(i.e. CFC, HCFC, Halon, etc.) The Gem State facility is not a source of any pollutants regualted by NSPS other than NSR regulated air pollutants, nor is the facility a source of Class I or Class II Ozone Depleting Substances

b)Ton per year emissions based on 5270.4 hours of operation/yr for the AMUs and 8520 hrs/year for all other listed equipment.

* The total shown in the table includes emissions from all four silo bin vents as if each bin vent were operating 8520 hrs/year, when in actuality, only one bin vent will operate at a time.

** See spreadsheets prepared by JBR (included in Appendix I of the permit application for further information regarding emission factors and calculation assumptions.

IDEQ PTC Forms
Ambient Impact Assessment Emission Inventory
for New Minor Facilities and Minor Modifications

Table 2 Proposed Emissions

Emissions Unit*	Emissions Point ID	Stack ID	PM_{10}		SO_2			NO_x	CO		Lead
			lb/hr 24-hr Avg.	lb/hr Annual Avg.	lb/hr 3-hr Avg.	lb/hr 24-hr Avg.	lb/hr Annual Avg.	lb/hr Annual Avg.	lb/hr Max.	lb/hr 8-hr Avg.	lb/hr 1/4ly Avg.
Point Sources											
Boiler #1 (1200 hp)	EU -1	BO1	0.048	0.047	n/a	n/a	n/a	1.695	n/a	n/a	n/a
Boiler #2 (1200 hp)	EU -2	BO2	0.048	0.047	n/a	n/a	n/a	1.695	n/a	n/a	n/a
Boiler #3 (1600 hp)	EU -3	BO3	0.065	0.063	n/a	n/a	n/a	2.259	n/a	n/a	n/a
Bubble Sheet Dryer #1	EU -4	PRE1	0.754	0.734	n/a	n/a	n/a	0.572	n/a	n/a	n/a
Bubble Sheet Dryer #2	EU -5	PRE2	0.045	0.043	n/a	n/a	n/a	0.572	n/a	n/a	n/a
Reyco AMU #1 850	EU -9	Please see AMU Exhaust Distribution Table Attached to this Table									
Reyco AMU #2 1000	EU -10	Please see AMU Exhaust Distribution Table Attached to this Table									
Reyco AMU #3 1000	EU -11	Please see AMU Exhaust Distribution Table Attached to this Table									
Reyco AMU #4 1250	EU -12	Please see AMU Exhaust Distribution Table Attached to this Table									
Plant Reciever Baghouse #1	EU -19	BH-1	0.0001	0.0001	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Plant Reciever Baghouse #2	EU -20	BH-1	0.0001	0.0001	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Plant Reciever Baghouse #3	EU -21	BH-1	0.0001	0.0001	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Plant Reciever Baghouse #4	EU -22	BH-1	0.0001	0.0001	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Truck Loadout Baghouse	EU -23	BH-1	0.0001	0.0001	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Nuisance Dust Collector	EU -26	BH-1 Total	0.0003	0.00032	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Emissions Units EU-18 through EU-23 discharge into the facility building and are controlled by the Nuisance Dust Collector. The total emissions shown for EU-26 (BH-1 Total) represent the emissions value used in the air dispersion model for Stack ID BH-1									
Pneumatic Conveying Line	EU -25	PRE-3	0.06	0.06	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #1	EU -27	DFH#1	0.63	0.61	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #1	EU -28	SFD#1	2.00E-02	1.95E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #2	EU -29	DFH#2	0.63	0.61	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #2	EU -30	SFD#2	2.00E-02	1.95E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #3	EU -31	DFH#3	0.63	0.61	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #3	EU -32	SFD#3	2.00E-02	1.95E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #4	EU -33	DFH#4	0.63	0.61	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #4	EU -34	SFD#4	2.00E-02	1.95E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #5	EU -35	DFH#5	0.63	0.61	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #5	EU -36	SFD#5	2.00E-02	1.95E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Drum Fan Hood #6	EU -37	DFH#6	0.63	0.61	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Drum Dryer Snifter Fan Drum #6	EU -38	SFD#6	2.00E-02	1.95E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Volume Sources											
Silo Bin Vent Baghouse #1	EU -14	BV1A	0.06	0.06	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Silo Bin Vent Baghouse #2	EU -15	BV2A	0.06	0.06	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Silo Bin Vent Baghouse #3	EU -16	BV3A	0.06	0.06	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Silo Bin Vent Baghouse #4	EU -17	BV4A	0.06	0.06	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Only one Silo Bin Vent will be operated at a time									
Rail Load Baghouse	EU -24	RAILLOAD	0.06	0.06	n/a	n/a	n/a	n/a	n/a	n/a	n/a

IDEQ PTC Forms
Toxic Air Pollutant Emissions Inventory

Table 1. PRE- AND POST PROJECT NON-CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Non-Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Antimony	0.00E+00	0.00E+00	0.00E+00	3.30E-02	N
Barium	0.00E+00	9.21E-04	9.21E-04	3.30E-02	N
Chromium	0.00E+00	2.93E-04	2.93E-04	3.30E-02	N
Cobalt	0.00E+00	1.76E-05	1.76E-05	3.30E-03	N
Copper	0.00E+00	1.78E-04	1.78E-04	6.70E-02	N
Ethylbenzene	0.00E+00	0.00E+00	0.00E+00	2.90E+01	N
Fluoride (as F)	0.00E+00	0.00E+00	0.00E+00	1.67E-01	N
Hexane	0.00E+00	3.77E-01	3.77E-01	1.20E+01	N
Manganese	0.00E+00	7.96E-05	7.96E-05	3.33E-01	N
Mercury	0.00E+00	5.44E-05	5.44E-05	3.00E-03	N
Molybdenum	0.00E+00	2.30E-04	2.30E-04	3.33E-01	N
Naphthalene	0.00E+00	1.28E-04	1.28E-04	3.33E+00	N
Pentane	0.00E+00	5.44E-01	5.44E-01	1.18E+02	N
Phosphorous	0.00E+00	0.00E+00	0.00E+00	7.00E-03	N
Selenium	0.00E+00	5.02E-06	5.02E-06	1.30E-02	N
1,1,1-Trichloroethane	0.00E+00	0.00E+00	0.00E+00	1.27E+02	N
Toluene	0.00E+00	7.12E-04	7.12E-04	2.50E+01	N
o-Xylene	0.00E+00	0.00E+00	0.00E+00	2.90E+01	N
Zinc	0.00E+00	6.07E-03	6.07E-03	6.67E-01	N

** See spreadsheets prepared by JBR (included in Appendix I of the permit application for further information regarding emission factors and calculation assumptions.

Table 2. PRE- AND POST PROJECT CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Arsenic	0.00E+00	4.07E-05	4.07E-05	1.50E-06	Y
Benzene	0.00E+00	4.28E-04	4.28E-04	8.00E-04	N
Beryllium	0.00E+00	2.44E-06	2.44E-06	2.80E-05	N
Cadmium	0.00E+00	2.24E-04	2.24E-04	3.70E-06	Y
Chromium VI	0.00E+00	0.00E+00	0.00E+00	5.60E-07	N
Formaldehyde	0.00E+00	1.53E-02	1.53E-02	5.10E-04	Y
Nickel	0.00E+00	4.28E-04	4.28E-04	2.70E-05	Y
Benzo(a)pyrene	0.00E+00	2.44E-07	2.44E-07	2.00E-06	N
Benz(a)anthracene	0.00E+00	3.67E-07	3.67E-07	NA	N
Benzo(b)fluoranthene	0.00E+00	3.67E-07	3.67E-07	NA	N
Benzo(k)fluoranthene	0.00E+00	3.67E-07	3.67E-07	NA	N
Chrysene	0.00E+00	3.67E-07	3.67E-07	NA	N
Dibenzo(a,h)anthracene	0.00E+00	2.44E-07	2.44E-07	NA	N
Indeno(1,2,3-cd)pyrene	0.00E+00	3.67E-07	3.67E-07	NA	N
Total PAHs	0.00E+00	2.32E-06	2.32E-06	2.00E-06	Y

a) PAH is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

** See spreadsheets prepared by JBR (included in Appendix I of the permit application for further information regarding emission factors and calculation assumptions.

IDEQ PTC Forms
Facility Wide Hazardous Air Pollutant Potential to Emit

Table 1 HAP POTENTIAL TO EMIT EMISSIONS SUMMARY

HAP Pollutants	PTE (T/yr)
Benzene	**1.03E-04**
Formaldehyde	**3.69E-03**
Hexane*	**8.85E-02**
Naphthalene	**3.00E-05**
Toluene	**1.67E-04**
Arsenic Compounds	**9.83E-06**
Beryllium Compounds	**5.90E-07**
Cadmium Compounds	**5.26E-05**
Chromium Compounds	**6.88E-05**
Cobalt Compounds	**4.13E-06**
Manganese Compounds	**1.87E-05**
Mercury Compounds	**1.28E-05**
Nickel Compounds	**1.03E-04**
Selenium Compounds	**1.18E-06**
Total	9.27E-02

* Maximum Individual HAP

** See spreadsheets prepared by JBR (included in Appendix I of the permit application for further information regarding emission factors and calculation assumptions.

Gem State Processing, LLC
Heyburn Facility

CONTROLLED CRITERIA POLLUTANTS POTENTIAL TO EMIT

	Fuel Combustion of Natural Gas											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Boiler #1 (1200 hp)	1.742	7.422	1.936	8.247	0.048	0.206	0.027	0.113	0.194	0.825	0.000	0.000
Boiler #2 (1200 hp)	1.742	7.422	1.936	8.247	0.048	0.206	0.027	0.113	0.194	0.825	0.000	0.000
Boiler #3 (1600 hp)	2.323	9.896	2.581	10.996	0.065	0.275	0.035	0.151	0.258	1.100	0.000	0.000
Reyco AMU #1 850	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #2 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #3 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #4 1250	0.980	2.584	0.824	2.170	0.075	0.196	0.006	0.016	0.054	0.142	0.000	0.000
Bubble Sheet Dryer #1	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000
Bubble Sheet Dryer #2	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000

	Particulate Equipment											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Silo Bin Vent Baghouse #1					0.06	0.26						
Silo Bin Vent Baghouse #2					0.06	0.26						
Silo Bin Vent Baghouse #3					0.06	0.26						
Silo Bin Vent Baghouse #4					0.06	0.26						
Plant Reciever Baghouse #1					0.07	0.31						
Plant Reciever Baghouse #2					0.07	0.31						
Plant Reciever Baghouse #3					0.06	0.26						
Plant Reciever Baghouse #4					0.06	0.26						
Plant Reciever Baghouse #5					0.07	0.31						
Plant Reciever Baghouse #6					0.06	0.26						
Truck Loadout Baghouse					0.06	0.26						
Rail Load Baghouse					0.06	0.26						
Pneumatic Conveying Line Baghouse					0.06	0.26						
Nuisance Dust Collector					0.0003	0.0014						
Drum Dryer Drum Fan Hood #1					0.63	2.68						
Drum Dryer Snifter Fan Drum #1					0.02000	0.08520						
Drum Dryer Drum Fan Hood #2					0.63	2.68						
Drum Dryer Snifter Fan Drum #2					0.02000	0.08520						
Drum Dryer Drum Fan Hood #3					0.63	2.68						
Drum Dryer Snifter Fan Drum #3					0.02000	0.08520						
Drum Dryer Drum Fan Hood #4					0.63	2.68						
Drum Dryer Snifter Fan Drum #4					0.02000	0.08520						
Drum Dryer Drum Fan Hood #5					0.63	2.68						
Drum Dryer Snifter Fan Drum #5					0.02000	0.08520						
Drum Dryer Drum Fan Hood #6					0.63	2.68						
Drum Dryer Snifter Fan Drum #6					0.02000	0.08520						
Bubble Sheet Dryer #1					0.71	3.02						
Bubble Sheet Dryer #2					0.00	0.00						

	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
TOTAL	10.61	39.31	10.49	39.73	5.77	24.14	0.12	0.47	0.91	3.55	0.0001	0.0001

Gem State Processing, LLC
Heyburn Facility

UNCONTROLLED CRITERIA POLLUTANTS POTENTIAL TO EMIT

	Fuel Combustion of Natural Gas											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Boiler #1 (1200 hp)	4.840	20.617	1.975	8.412	0.049	0.210	0.027	0.116	0.197	0.841	0.000	0.000
Boiler #2 (1200 hp)	4.840	20.617	1.975	8.412	0.049	0.210	0.027	0.116	0.197	0.841	0.000	0.000
Boiler #3 (1600 hp)	6.453	27.490	2.581	10.996	0.065	0.275	0.035	0.151	0.258	1.100	0.000	0.000
Reyco AMU #1 850	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #2 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #3 1000	0.882	2.325	0.741	1.953	0.067	0.177	0.005	0.014	0.049	0.128	0.000	0.000
Reyco AMU #4 1250	0.980	2.584	0.824	2.170	0.075	0.196	0.006	0.016	0.054	0.142	0.000	0.000
Bubble Sheet Dryer #1	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000
Bubble Sheet Dryer #2	0.588	2.506	0.494	2.105	0.045	0.190	0.004	0.015	0.032	0.138	0.000	0.000

	Particulate Equipment											
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Silo Bin Vent Baghouse #1					0.06	0.26						
Silo Bin Vent Baghouse #2					0.06	0.26						
Silo Bin Vent Baghouse #3					0.06	0.26						
Silo Bin Vent Baghouse #4					0.06	0.26						
Plant Reciever Baghouse #1					0.07	0.31						
Plant Reciever Baghouse #2					0.07	0.31						
Plant Reciever Baghouse #3					0.06	0.26						
Plant Reciever Baghouse #4					0.06	0.26						
Plant Reciever Baghouse #5					0.06	0.26						
Plant Reciever Baghouse #6					0.07	0.31						
Truck Loadout Baghouse					0.06	0.26						
Rail Load Baghouse					0.06	0.26						
Pneumatic Conveying Line Baghouse					0.06	0.26						
Nuisance Dust Collector					0.32	1.38						
Drum Dryer Drum Fan Hood #1					0.63	2.68						
Drum Dryer Snifter Fan Drum #1					0.02000	0.0852						
Drum Dryer Drum Fan Hood #2					0.63	2.68						
Drum Dryer Snifter Fan Drum #2					0.02000	0.0852						
Drum Dryer Drum Fan Hood #3					0.63	2.68						
Drum Dryer Snifter Fan Drum #3					0.02000	0.0852						
Drum Dryer Drum Fan Hood #4					0.63	2.68						
Drum Dryer Snifter Fan Drum #4					0.02000	0.0852						
Drum Dryer Drum Fan Hood #5					0.63	2.68						
Drum Dryer Snifter Fan Drum #5					0.02000	0.0852						
Drum Dryer Drum Fan Hood #6					0.63	2.68						
Drum Dryer Snifter Fan Drum #6					0.02000	0.0852						
Bubble Sheet Dryer #1					0.71	3.02						
Bubble Sheet Dryer #2					0.00	0.00						

	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
TOTAL	20.94	83.30	10.57	40.06	6.10	25.53	0.12	0.47	0.92	3.58	0.0001	0.0001

Gem State Processing, LLC
Heyburn Facility

TOXIC AIR POLLUTANTS (TAPs) COMBUSTION CALCULATIONS
GEM STATE

Emission Unit	Fuel Usage	
Boiler #1[a] (1200 hp)	48,398.00	scf/hr
Boiler #2[a] (1200 hp)	48,398.00	scf/hr
Boiler #3[a] (1600 hp)	64,530.00	scf/hr
Reyco AMU #1 850	8,823.53	scf/hr
Reyco AMU #2 1000	8,823.53	scf/hr
Reyco AMU #3 1000	8,823.53	scf/hr
Reyco AMU #4 1250	9,803.92	scf/hr
Bubble Sheet Dryer #1	5,882.35	scf/hr
Bubble Sheet Dryer #2	5,882.35	scf/hr

NON-CARCINOGENS (POUNDS PER HOUR)

Pollutant	CAS #	EF for NG Combustion ($lb/10^6$ scf)[a]	TAP Emissions (lb/hr)	Screening Level (lb/hr)	Modeling? (Y/N)
Antimony	7440-36-0	0.0E+00	0.00E+00	3.3E-02	No
Barium	7440-39-3	4.4E-03	9.21E-04	3.3E-02	No
Chromium	7440-47-3	1.4E-03	2.93E-04	3.3E-02	No
Cobalt	7440-48-4	8.4E-05	1.76E-05	3.3E-03	No
Copper	7440-50-8	8.5E-04	1.78E-04	6.7E-02	No
Ethylbenzene	100-41-4	0.0E+00	0.00E+00	2.9E+01	No
Fluoride (as F)	16984-48-8	0.0E+00	0.00E+00	1.67E-01	No
Hexane	110-54-3	1.8E+00	3.77E-01	1.2E+01	No
Manganese	7439-96-5	3.8E-04	7.96E-05	3.33E-01	No
Mercury	7439-97-6	2.6E-04	5.44E-05	3.E-03	No
Molybdenum	7439-98-7	1.1E-03	2.30E-04	3.33E-01	No
Naphthalene	91-20-3	6.1E-04	1.28E-04	3.33E+00	No
Pentane	109-66-0	2.6E+00	5.44E-01	1.18E+02	No
Phosphorous	7723-14-0	0.0E+00	0.00E+00	7.E-03	No
Selenium	7782-49-2	2.4E-05	5.02E-06	1.3E-02	No
1,1,1-Trichloroethane	71-55-6	0.0E+00	0.00E+00	1.27E+02	No
Toluene	108-88-3	3.4E-03	7.12E-04	2.5E+01	No
o-Xylene	1330-20-7	0.0E+00	0.00E+00	2.9E+01	No
Zinc	7440-66-6	2.9E-02	6.07E-03	6.67E-01	No

CARCINOGENS (POUNDS PER HOUR)

Pollutant	CAS #	EF for Natural Gas Combustion ($lb/10^6$ scf)[a]	TAP Emissions (lb/hr)	Screening Level (lb/hr)	Modeling? (Y/N)
Arsenic	7440-38-2	2.0E-04	4.19E-05	1.5E-06	Yes
Benzene	71-43-2	2.1E-03	4.40E-04	8.0E-04	No
Beryllium	7440-41-7	1.2E-05	2.51E-06	2.8E-05	No
Cadmium	7440-43-9	1.1E-03	2.30E-04	3.7E-06	Yes
Chromium VI	7440-47-3	0.0E+00	0.00E+00	5.6E-07	No
Formaldehyde	50-00-0	7.5E-02	1.57E-02	5.1E-04	Yes
Nickel	7440-02-0	2.1E-03	4.40E-04	2.7E-05	Yes
Benzo(a)pyrene	50-32-8	1.2E-06	2.51E-07	2.0E-06	No
Benz(a)anthracene	56-55-3	1.8E-06	3.77E-07	NA	No
Benzo(b)fluoranthene	205-82-3	1.8E-06	3.77E-07	NA	No
Benzo(k)fluoranthene	205-99-2	1.8E-06	3.77E-07	NA	No
Chrysene	218-01-9	1.8E-06	3.77E-07	NA	No
Dibenzo(a,h)anthracene	53-70-3	1.2E-06	2.51E-07	NA	No
Indeno(1,2,3-cd)pyrene	193-39-5	1.8E-06	3.77E-07	NA	No
Total PAHs		1.1E-05	2.39E-06	2.00E-06	Yes

[a]EFs from AP-42, Tables 1.4-3 and 1.4-4, 7/98

[b]EFs from AP-42, Table 1.3-10, 9/98

Gem State Processing, LLC
Heyburn Facility

CRITERIA EMISSIONS - UNCONTROLLED NATURAL GAS COMBUSTION (lb/hr)

Emission Factors

NOx	0.036	lb/MMBtu	Manufacturer specific emission factor for 30 ppm A-FGR low NOx burner on boiler
CO	0.04	lb/MMBtu	Manufacturer specific emission factor for boiler
PM-10	0.001	lb/MMBtu	Manufacturer specific emission factor for boilers
SOx	0.00055	lb/MMBtu	Manufacturer specific emission factor for boilers
VOC	0.004	lb/MMBtu	Manufacturer specific emission factor for boilers
NOx	100	lb/10^6 scf	AP-42, Table 1.4-1, 1998
CO	84	lb/10^6 scf	AP-42, Table 1.4-1, 1998
PM-10	7.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
SOx	0.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
VOC	5.5	lb/10^6 scf	AP-42, Table 1.4-2, 1998
Lead	0.0005	lb/10^6 scf	AP-42, Table 1.4-2, 1998

Description	Capacity (MMBtu/hr)	Throughput (scf/hr)	Pounds per Hour					
			NOx Emissions (lb/hr)	CO Emissions (lb/hr)	PM/PM-10 Emissions (lb/hr)	SOx Emissions (lb/hr)	VOC Emissions (lb/hr)	Lead Emissions (lb/hr)
Boiler #1[a] (1200 hp)	49.37	48,398	4.8398	1.9746	0.0494	0.0272	0.1975	0.0000242
Boiler #2[a] (1200 hp)	49.37	48,398	4.8398	1.9746	0.0494	0.0272	0.1975	0.0000242
Boiler #3[a] (1600 hp)	64.53	64,530	6.4530	2.5812	0.0645	0.0355	0.2581	0.0000323
Reyco AMU #1 850	9.0	8,824	0.8824	0.7412	0.0671	0.0053	0.0485	0.0000044
Reyco AMU #2 1000	9.0	8,824	0.8824	0.7412	0.0671	0.0053	0.0485	0.0000044
Reyco AMU #3 1000	9.0	8,824	0.8824	0.7412	0.0671	0.0053	0.0485	0.0000044
Reyco AMU #4 1250	10.0	9,804	0.9804	0.8235	0.0745	0.0059	0.0539	0.0000049
Bubble Sheet Dryer #1	6.0	5,882	0.5882	0.4941	0.0447	0.0035	0.0324	0.0000029
Bubble Sheet Dryer #2	6.0	5,882	0.5882	0.4941	0.0447	0.0035	0.0324	0.0000029
TOTAL	**212.3**	**209,364.4**	**20.94**	**10.57**	**0.53**	**0.12**	**0.92**	**1.05E-04**

[a]The boilers will be equipped with Low NOx Burners; however the calculations shown in this spreadsheet are the uncontrolled emissions using emissions factors from AP-42 for NOx and CO emissions from the boilers. Boiler capacity and throughput based on manufacturer specific information

Gem State Processing, LLC
Heyburn Facility

CRITERIA EMISSIONS - CONTROLLED NATURAL GAS COMBUSTION (lb/hr)

Emission Factors

NOx	0.036	lb/MMBtu	Manufacturer specific emission factor for 30 ppm A-FGR low NOx burner on boiler
CO	0.04	lb/MMBtu	Manufacturer specific emission factor for boiler
PM-10	0.001	lb/MMBtu	Manufacturer specific emission factor for boilers
SOx	0.00055	lb/MMBtu	Manufacturer specific emission factor for boilers
VOC	0.004	lb/MMBtu	Manufacturer specific emission factor for boilers
NOx	100	lb/10^6 scf	AP-42, Table 1.4-1, 1998
CO	84	lb/10^6 scf	AP-42, Table 1.4-1, 1998
PM-10	7.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
SOx	0.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
VOC	5.5	lb/10^6 scf	AP-42, Table 1.4-2, 1998
Lead	0.0005	lb/10^6 scf	AP-42, Table 1.4-2, 1998

Description	Capacity (MMBtu/hr)	Throughput (scf/hr)	Pounds per Hour					
			NOx Emissions (lb/hr)	CO Emissions (lb/hr)	PM/PM-10 Emissions (lb/hr)	SOx Emissions (lb/hr)	VOC Emissions (lb/hr)	Lead Emissions (lb/hr)
Boiler #1[a] (1200 hp)	48.40	48,398	1.7423	1.9359	0.0484	0.0266	0.1936	0.0000242
Boiler #2[a] (1200 hp)	48.40	48,398	1.7423	1.9359	0.0484	0.0266	0.1936	0.0000242
Boiler #3[a] (1600 hp)	64.53	64,530	2.3231	2.5812	0.0645	0.0355	0.2581	0.0000323
Reyco AMU #1 850	9.0	8,824	0.8824	0.7412	0.0671	0.0053	0.0485	0.0000044
Reyco AMU #2 1000	9.0	8,824	0.8824	0.7412	0.0671	0.0053	0.0485	0.0000044
Reyco AMU #3 1000	9.0	8,824	0.8824	0.7412	0.0671	0.0053	0.0485	0.0000044
Reyco AMU #4 1250	10.0	9,804	0.9804	0.8235	0.0745	0.0059	0.0539	0.0000049
Bubble Sheet Dryer #1	6.0	5,882	0.5882	0.4941	0.0447	0.0035	0.0324	0.0000029
Bubble Sheet Dryer #2	6.0	5,882	0.5882	0.4941	0.0447	0.0035	0.0324	0.0000029
TOTAL	**210.33**	**209,365.22**	**10.61**	**10.49**	**0.53**	**0.12**	**0.91**	**1.05E-04**

[a]Utilize Low NOx Burners, capacity and throughput based on manufacturer specific information

Gem State Processing, LLC
Heyburn Facility

CRITERIA EMISSIONS - UNCONTROLLED NATURAL GAS COMBUSTION (tpy)

Emission Factors

NOx	0.036	lb/MMBtu	Manufacturer specific emission factor for 30 ppm A-FGR low NOx burner on boiler
CO	0.04	lb/MMBtu	Manufacturer specific emission factor for boiler
PM-10	0.001	lb/MMBtu	Manufacturer specific emission factor for boilers
SOx	0.00055	lb/MMBtu	Manufacturer specific emission factor for boilers
VOC	0.004	lb/MMBtu	Manufacturer specific emission factor for boilers
NOx	100	lb/10^6 scf	AP-42, Table 1.4-1, 1998
CO	84	lb/10^6 scf	AP-42, Table 1.4-1, 1998
PM-10	7.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
SOx	0.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
VOC	5.5	lb/10^6 scf	AP-42, Table 1.4-2, 1998
Lead	0.0005	lb/10^6 scf	AP-42, Table 1.4-2, 1998

Description	Capacity (MMBtu/hr)	Throughput (scf/hr)	Ton per Year					
			NOx Emissions (T/yr)	CO Emissions (T/yr)	PM/PM-10 Emissions (T/yr)	SOx Emissions (T/yr)	VOC Emissions (T/yr)	Lead Emissions (T/yr)
Boiler #1[a] (1200 hp)	48.40	48,398	20.62	8.41	0.21	0.12	0.84	1.03E-04
Boiler #2[a] (1200 hp)	48.40	48,398	20.62	8.41	0.21	0.12	0.84	1.03E-04
Boiler #3[a] (1600 hp)	64.53	64,530	27.49	11.00	0.27	0.15	1.10	1.37E-04
Reyco AMU #1 850	9.0	8,824	2.33	1.95	0.18	0.01	0.13	1.16E-05
Reyco AMU #2 1000	9.0	8,824	2.33	1.95	0.18	0.01	0.13	1.16E-05
Reyco AMU #3 1000	9.0	8,824	2.33	1.95	0.18	0.01	0.13	1.16E-05
Reyco AMU #4 1250	10.0	9,804	2.58	2.17	0.20	0.02	0.14	1.29E-05
Bubble Sheet Dryer #1	6.0	5,882	2.51	2.10	0.19	0.02	0.14	1.25E-05
Bubble Sheet Dryer #2	6.0	5,882	2.51	2.10	0.19	0.02	0.14	1.25E-05
TOTAL	**210.33**	**209,365.22**	**83.30**	**40.06**	**1.80**	**0.47**	**3.58**	**4.2E-04**

[a]The boilers will be equipped with Low NOx Burners; however the calculations shown in this spreadsheet are the uncontrolled emissions using emissions factors from AP-42 for NOx and CO emissions from the boilers. Boiler capacity and throughput based on manufacturer specific information
Ton per year emissions based on 5270.4 hours of operation/yr for the AMUs and 8520 hrs/year for all other listed equipment.

Gem State Processing, LLC
Heyburn Facility

CRITERIA EMISSIONS - CONTROLLED NATURAL GAS COMBUSTION (tpy)

Emission Factors

NOx	0.036	lb/MMBtu	Manufacturer specific emission factor for 30 ppm A-FGR low NOx burner on boiler
CO	0.04	lb/MMBtu	Manufacturer specific emission factor for boiler
PM-10	0.001	lb/MMBtu	Manufacturer specific emission factor for boilers
SOx	0.00055	lb/MMBtu	Manufacturer specific emission factor for boilers
VOC	0.004	lb/MMBtu	Manufacturer specific emission factor for boilers
NOx	100	lb/10^6 scf	AP-42, Table 1.4-1, 1998
CO	84	lb/10^6 scf	AP-42, Table 1.4-1, 1998
PM-10	7.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
SOx	0.6	lb/10^6 scf	AP-42, Table 1.4-2, 1998
VOC	5.5	lb/10^6 scf	AP-42, Table 1.4-2, 1998
Lead	0.0005	lb/10^6 scf	AP-42, Table 1.4-2, 1998

Description	Capacity (MMBtu/hr)	Throughput (scf/hr)	Ton per Year					
			NOx Emissions (T/yr)	CO Emissions (T/yr)	PM/PM-10 Emissions (T/yr)	SOx Emissions (T/yr)	VOC Emissions (T/yr)	Lead Emissions (T/yr)
Boiler #1[a] (1200 hp)	48.40	48,398	7.42	8.25	0.21	0.11	0.82	1.03E-04
Boiler #2[a] (1200 hp)	48.40	48,398	7.42	8.25	0.21	0.11	0.82	1.03E-04
Boiler #3[a] (1600 hp)	64.53	64,530	9.90	11.00	0.27	0.15	1.10	1.37E-04
Reyco AMU #1 850	9.0	8,824	2.33	1.95	0.18	0.01	0.13	1.16E-05
Reyco AMU #2 1000	9.0	8,824	2.33	1.95	0.18	0.01	0.13	1.16E-05
Reyco AMU #3 1000	9.0	8,824	2.33	1.95	0.18	0.01	0.13	1.16E-05
Reyco AMU #4 1250	10.0	9,804	2.58	2.17	0.20	0.02	0.14	1.29E-05
Bubble Sheet Dryer #1	6.0	5,882	2.51	2.10	0.19	0.02	0.14	1.25E-05
Bubble Sheet Dryer #2	6.0	5,882	2.51	2.10	0.19	0.02	0.14	1.25E-05
TOTAL	**210.3**	**209,365.2**	**39.3**	**39.7**	**1.8**	**0.5**	**3.6**	**4.2E-04**

[a]Utilize Low NOx Burners, capacity and throughput based on manufacturer specific information

Ton per year emissions based on 5270.4 hours of operation/yr for the AMUs and 8520 hrs/year for all other listed equipment.

Gem State Processing, LLC
Heyburn Facility

UNCONTROLLED PARTICULATE EMISSIONS - DRYERS, FLAKERS, AND BAGHOUSE EQUIPMENT

Description	Throughput (scfm)	Emission Factor (grain/scf)	EF Reference	PM Emissions (lb/hr)	PM Emissions (T/yr) [a]	PM-10 Emissions (lb/hr)	PM-10 Emissions (T/yr) [a]
Silo Bin Vent Baghouse #1	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Silo Bin Vent Baghouse #2	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Silo Bin Vent Baghouse #3	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Silo Bin Vent Baghouse #4	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Plant Reciever Baghouse #1 (Multi-Purpose)	1,200	0.007	Manufacturer Guarantee	0.07	0.31	0.07	0.31
Plant Reciever Baghouse #2 (Off-Spec)	1,200	0.007	Manufacturer Guarantee	0.07	0.31	0.07	0.31
Plant Reciever Baghouse #3 (Sack/Tote Pacing)	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Plant Reciever Baghouse #4 (Bag Packing)	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Plant Reciever Baghouse #5 (Pet Food)	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Plant Reciever Baghouse #6 (Off-Spec #2)	1,200	0.007	Manufacturer Guarantee	0.07	0.31	0.07	0.31
Truck Loadout Baghouse	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Rail Load Baghouse	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Pneumatic Conveying Line[b]	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Nuisance Dust Collector	See note f	See note f	Manufacturer Guarantee	0.324	1.380	0.324	1.380

Description	Throughput (lb/hr dry)	Emission Factor (lb/ton)	EF Reference	PM Emissions (lb/hr)	PM Emissions (T/yr) [a]	PM-10 Emissions (lb/hr)	PM-10 Emissions (T/yr) [a]
Drum Dryer Drum Fan Hood #1[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum#1[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #2[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #2[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #3[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #3[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #4[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #4[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #5[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #5[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #6[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #6[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Bubble Sheet Dryer #1[i]	3300	0.43	Performance Test Results[h]	0.71	3.02	0.71	3.02
Bubble Sheet Dryer #2[i]	0	0.43	Performance Test Results[h]	0.00	0.00	0.00	0.00
TOTAL[e]	30,407			6	24	6	24

[a] Ton per year emissions based on 8,520 hours of operation/yr

[b] The Pneumatic Conveying Line includes the baghouse on each drum dryer used to convey product to the packaging recievers.

[c] Based on engineering judgement from review of various references, drum fan hood emissions comprise approximately 90.6% of drum dryer emissions. Sifter fan drum emissions comprise approximately 9.4% of drum dryer emissions; the emission factor (lb/ton) was calculated to reflect this ratio.

[d] The total lb/hr emission rate from the Drum Dryer Snifter Fans was determined based on model sensitivity analysis. This is the maximum emission rate the snifter fans can emit in order for the facility to be in compliance with the PM10 NAAQs standards.

[e] Only one of the four Silo Bin Vents will operate at one time.

[f] The nuisance dust collector will collect fugitive dust from other emissions sources that discharge inside the building including the reject silo baghouse, plant reciever baghouses, and truck loadout baghouse.

[g] Emission Factor was established by June 20-21, 2011 Performance Test

[h] Emission Factor was established by September 21, 2011 Performance Test

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[i] A total of 18% of the flakes will flow through the fluidized bed dryers (9% each)

Gem State Processing, LLC
Heyburn Facility

CONTROLLED PARTICULATE EMISSIONS - DRYERS, FLAKERS, AND BAGHOUSE EQUIPMENT

Description	Throughput (scfm)	Emission Factor (grain/scf)	EF Reference	PM Emissions (lb/hr)	PM Emissions (T/yr) [a]	PM-10/PM2.5 Emissions (lb/hr)	PM-10/PM-2.5 Emissions (T/yr)
Silo Bin Vent Baghouse #1	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Silo Bin Vent Baghouse #2	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Silo Bin Vent Baghouse #3	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Silo Bin Vent Baghouse #4	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Plant Reciever Baghouse #1 (Multi-Purpose)	1,200	0.007	Manufacturer Guarantee	0.07	0.31	0.07	0.31
Plant Reciever Baghouse #2 (Off-Spec)	1,200	0.007	Manufacturer Guarantee	0.07	0.31	0.07	0.31
Plant Reciever Baghouse #3 (Sack/Tote Pacing)	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Plant Reciever Baghouse #4 (Bag Packing)	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Plant Reciever Baghouse #5 (Pet Food)	1,200	0.007	Manufacturer Guarantee	0.07	0.31	0.07	0.31
Plant Reciever Baghouse #6 (Off-Spec#2)	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Truck Loadout Baghouse	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Rail Load Baghouse	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Pneumatic Conveying Line[b]	1,000	0.007	Manufacturer Guarantee	0.06	0.26	0.06	0.26
Nuisance Dust Collector	See note f	See note f	Manufacturer Guarantee	0.0003	0.001	0.0003	0.001

Description	Throughput (lb/hr dry)	Emission Factor (lb/ton)	EF Reference	PM Emissions (lb/hr)	PM Emissions (T/yr)	PM-10/PM2.5 Emissions (lb/hr)	PM-10/PM-2.5 Emissions (T/yr)
Drum Dryer Drum Fan Hood #1[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum#1[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #2[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #2[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #3[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #3[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #4[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #4[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #5[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #5[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Drum Dryer Drum Fan Hood #6[c]	2250	0.63	Performance Test Results[g]	0.63	2.68	0.63	2.68
Drum Dryer Snifter Fan Drum #6[d]	1.125	0.02	Performance Test Results[g]	0.020	0.08520	0.02000	0.08520
Bubble Sheet Dryer #1[i]	3300	0.43	Performance Test Results[h]	0.71	3.02	0.71	3.02
Bubble Sheet Dryer #2[i]	0	0.43	Performance Test Results[h]	0.00	0.00	0.00	0.00
TOTAL[e]	30,407			5	22	5	22

[a] Ton per year emissions based on 8,520 hours of operation/yr

[b] The Pneumatic Conveying Line includes the baghouse on each drum dryer used to convey product to the packaging recievers.

[c] Based on engineering judgement from review of various references, drum fan hood emissions comprise approximately 90.6% of drum dryer emissions. Snifter fan drum emissions comprise approximately 9.4% of drum dryer emissions; the emission factor (lb/ton) was calculated to reflect this ratio.

[d] The total lb/hr emission rate from the Drum Dryer Snifter Fans was determined based on model sensitivity analysis. This is the maximum emission rate the snifter fans can emit in order for the facility to be in compliance with the PM10 NAAQs standards.

[e] Only one of the four Silo Bin Vents will operate at one time.

[f] The nuisance dust collector will collect fugitive dust from other emissions sources that discharge inside the building including the reject silo baghouse, plant reciever baghouses, and truck loadout baghouse.

[g] Emission Factor was established by June 20-21, 2011 Performance Test

[h] Emission Factor was established by September 21, 2011 Performance Test

[i] A total of 18% of the flakes will flow through the fluidized bed dryers (9% each)

Gem State Processing, LLC
Heyburn Facility

AIR MAKEUP UNITS - EXHAUST STACK EMISSIONS DISTRIBUTION

Area	Emissions Sources	Emissions													
		PM10 (lb/hr)	PM10 (tpy)	NOx (lb/hr)	NOx (tpy)	As (lb/hr)	As (tpy)	Cd (lb/hr)	Cd (tpy)	Formal (lb/hr)	Formal (tpy)	Ni (lb/hr)	Ni (tpy)	Total PAH (lb/hr)	Total PAH (tpy)
Zone #1	AMU-1	6.71E-02	1.77E-01	8.82E-01	2.33E+00	1.76E-06	4.65E-06	9.71E-06	2.56E-05	6.62E-04	1.74E-03	1.85E-05	4.88E-05	1.01E-07	2.65E-07
	AMU-2	6.71E-02	1.77E-01	8.82E-01	2.33E+00	1.76E-06	4.65E-06	9.71E-06	2.56E-05	6.62E-04	1.74E-03	1.85E-05	4.88E-05	1.01E-07	2.65E-07
	AMU-3	6.71E-02	1.77E-01	8.82E-01	2.33E+00	1.76E-06	4.65E-06	9.71E-06	2.56E-05	6.62E-04	1.74E-03	1.85E-05	4.88E-05	1.01E-07	2.65E-07
	Total	***2.01E-01***	***5.30E-01***	***2.65E+00***	***6.98E+00***	***5.29E-06***	***1.40E-05***	***2.91E-05***	***7.67E-05***	***1.99E-03***	***5.23E-03***	***5.56E-05***	***1.46E-04***	***3.02E-07***	***7.95E-07***
Zone #2	AMU-4	7.45E-02	1.96E-01	9.80E-01	2.58E+00	1.96E-06	5.17E-06	1.08E-05	2.84E-05	7.35E-04	1.94E-03	2.06E-05	5.43E-05	1.12E-07	2.95E-07
	Total	***7.45E-02***	***1.96E-01***	***9.80E-01***	***2.58E+00***	***1.96E-06***	***5.17E-06***	***1.08E-05***	***2.84E-05***	***7.35E-04***	***1.94E-03***	***2.06E-05***	***5.43E-05***	***1.12E-07***	***2.95E-07***

Area	Exhaust Stack	Exhaust Flow (acfm)	% of Flow	Emissions													
				PM10 (lb/hr)	PM10 (tpy)	NOx (lb/hr)	NOx (tpy)	As (lb/hr)	As (tpy)	Cd (lb/hr)	Cd (tpy)	Formal (lb/hr)	Formal (tpy)	Ni (lb/hr)	Ni (tpy)	Total PAH (lb/hr)	Total PAH (tpy)
Zone #1	EX-1	24225	0.217889908	4.38E-02	1.16E-01	5.77E-01	1.52E+00	1.15E-06	3.04E-06	6.34E-06	1.67E-05	4.33E-04	1.14E-03	1.21E-05	3.19E-05	6.58E-08	1.73E-07
	EX-2	24225	0.217889908	4.38E-02	1.16E-01	5.77E-01	1.52E+00	1.15E-06	3.04E-06	6.34E-06	1.67E-05	4.33E-04	1.14E-03	1.21E-05	3.19E-05	6.58E-08	1.73E-07
	EX-3	24225	0.217889908	4.38E-02	1.16E-01	5.77E-01	1.52E+00	1.15E-06	3.04E-06	6.34E-06	1.67E-05	4.33E-04	1.14E-03	1.21E-05	3.19E-05	6.58E-08	1.73E-07
	EX-4	7140	0.064220183	1.29E-02	3.40E-02	1.70E-01	4.48E-01	3.40E-07	8.96E-07	1.87E-06	4.93E-06	1.27E-04	3.36E-04	3.57E-06	9.41E-06	1.94E-08	5.11E-08
	EX-5	7140	0.064220183	1.29E-02	3.40E-02	1.70E-01	4.48E-01	3.40E-07	8.96E-07	1.87E-06	4.93E-06	1.27E-04	3.36E-04	3.57E-06	9.41E-06	1.94E-08	5.11E-08
	EX-6	24225	0.217889908	4.38E-02	1.16E-01	5.77E-01	1.52E+00	1.15E-06	3.04E-06	6.34E-06	1.67E-05	4.33E-04	1.14E-03	1.21E-05	3.19E-05	6.58E-08	1.73E-07
	Total	*111180*	*1*	*2.01E-01*	*5.30E-01*	*2.65E+00*	*6.98E+00*	*5.29E-06*	*1.40E-05*	*2.91E-05*	*7.67E-05*	*1.99E-03*	*5.23E-03*	*5.56E-05*	*1.46E-04*	*3.02E-07*	*7.95E-07*
Zone #2	EX-7	4000	0.037394011	2.79E-03	7.34E-03	3.67E-02	9.66E-02	7.33E-08	1.93E-07	4.03E-07	1.06E-06	2.75E-05	7.25E-05	7.70E-07	2.03E-06	4.18E-09	1.10E-08
	EX-8	7000	0.06543952	4.88E-03	1.28E-02	6.42E-02	1.69E-01	1.28E-07	3.38E-07	7.06E-07	1.86E-06	4.81E-05	1.27E-04	1.35E-06	3.55E-06	7.31E-09	1.93E-08
	EX-9	7000	0.06543952	4.88E-03	1.28E-02	6.42E-02	1.69E-01	1.28E-07	3.38E-07	7.06E-07	1.86E-06	4.81E-05	1.27E-04	1.35E-06	3.55E-06	7.31E-09	1.93E-08
	EX-10	17281	0.161551478	1.20E-02	3.17E-02	1.58E-01	4.17E-01	3.17E-07	8.35E-07	1.74E-06	4.59E-06	1.19E-04	3.13E-04	3.33E-06	8.76E-06	1.81E-08	4.76E-08
	EX-11	17281	0.161551478	1.20E-02	3.17E-02	1.58E-01	4.17E-01	3.17E-07	8.35E-07	1.74E-06	4.59E-06	1.19E-04	3.13E-04	3.33E-06	8.76E-06	1.81E-08	4.76E-08
	EX-12	17281	0.161551478	1.20E-02	3.17E-02	1.58E-01	4.17E-01	3.17E-07	8.35E-07	1.74E-06	4.59E-06	1.19E-04	3.13E-04	3.33E-06	8.76E-06	1.81E-08	4.76E-08
	EX-13	18563	0.173536258	1.29E-02	3.41E-02	1.70E-01	4.48E-01	3.40E-07	8.97E-07	1.87E-06	4.93E-06	1.28E-04	3.36E-04	3.57E-06	9.42E-06	1.94E-08	5.11E-08
	EX-14	18563	0.173536258	1.29E-02	3.41E-02	1.70E-01	4.48E-01	3.40E-07	8.97E-07	1.87E-06	4.93E-06	1.28E-04	3.36E-04	3.57E-06	9.42E-06	1.94E-08	5.11E-08
	Total	*106969*	*1*	*7.45E-02*	*1.96E-01*	*9.80E-01*	*2.58E+00*	*1.96E-06*	*5.17E-06*	*1.08E-05*	*2.84E-05*	*7.35E-04*	*1.94E-03*	*2.06E-05*	*5.43E-05*	*1.12E-07*	*2.95E-07*

APPENDIX F

Performance Test Results

Gem State Processing

Compliance Test Report
Drum Dryer
Heyburn, Idaho
June 20 and 21, 2011

Agency:
Idaho Department of Environmental Quality
1363 Fillmore Street
Twin Falls, Idaho 83301

Prepared for:
Gem State Processing
951 Highway 30
Heyburn, Idaho 83336

Prepared by:
Applied Environmental Consultants, a JBR company
1553 West Elna Rae Street, Suite 101
Tempe, Arizona 85281
480.829.0457

July 19, 2011

CERTIFICATION

This certifies that the data collected and presented herein is true and accurate to the best of our knowledge. All attempts were made to collect and analyze the data within the applicable guidelines established by the United States Environmental Protection Agency.

Jason Nockleby, QSTI
Senior Field Manager
Test Team Leader

Mannie L. Carpenter, P.E.
Senior Engineer
Quality Assurance Supervisor

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1.0 INTRODUCTION

Source emission engineering testing was conducted by Applied Environmental Consultants, a JBR company (AEC) at the Gem State Processing (Gem State) facility located in Heyburn, Idaho on June 20 and 21, 2011. Testing was conducted on the exhaust from the Drum Dryer #1 fan hood and snifter stack. Table 1.0-1 presents the emission units and emission species that were evaluated during the testing program along with the applicable test methods. Testing was performed by Jason Nockleby and Zachary Harbin of AEC. Mr. Nockleby served as the test team leader. Testing was conducted in fulfillment of Consent Order – Case No. E-2010.0040 and Air Quality Permit to Construct No. P-2010.0183. Portions of the testing were witnessed by Tom Anderson of the Idaho Department of Environmental Quality (IDEQ).

Table 1.0-1 Emission Unit, Emission Species, and Limits

EMISSION UNIT	EMISSION SPECIES	TEST METHOD
Drum Dryer #1 (Fan Hood & Snifter Stack)	$PM_{10}/PM_{2.5}$	EPA Method 5/202

1.2 Test Firm Project Specific Personnel

The following were the assignments for designated personnel.

Test Team Leader: Jason Nockleby, QSTI, served as AEC's primary contact with Gem State personnel. Mr. Nockleby was in charge of testing activities, daily QA/QC checks, data reduction and validation, and final report preparation. Mr. Nockleby operated the fan hood EPA Method 5/202 metering console and sampling train. Mr. Nockleby performed the sample recovery.

QA/QC Officer: Mannie Carpenter, P.E., was responsible for ensuring that field QA/QC procedures were followed. Mr. Carpenter was also responsible for the final report review.

Laboratory Manager: Sam Stefanoff coordinated in-house laboratory operations. Mr. Stefanoff was responsible for all glassware and reagent preparation, as well as sample analysis.

Technicians: Zachary Harbin provided assistance with the project. Mr. Harbin performed the initial flow rate traverses, moved the sampling probe and operated the snifter stack EPA Method 5/202 metering console and sampling trains.

2.0 TEST CHRONOLOGY AND RESULTS SUMMARY

2.1 Test Chronology

Tables 2.1-1 and 2.1-2 present the chronology of tests that were conducted during the testing program.

Table 2.1-1 Source Testing Chronology – Fan Hood

DATE	TIME	
6/20/11	1028-1435	EPA Methods 1, 2, 3, 4, and 5/202 – Run 1
6/21/11	0831-1240	EPA Methods 1, 2, 3, 4, and 5/202 – Run 2
6/21/11	1336-1746	EPA Methods 1, 2, 3, 4, and 5/202 – Run 3

Table 2.1-2 Source Testing Chronology – Snifter Stack

DATE	TIME	
6/20/11	1031-1637	EPA Methods 1, 2, 3, 4, and 5/202 – Run 1
6/21/11	0829-1240	EPA Methods 1, 2, 3, 4, and 5/202 – Run 2
6/21/11	1335-1738	EPA Methods 1, 2, 3, 4, and 5/202 – Run 3

2.2 Test Results

Tables 2.2-1 through 2.2-3 present the results of the tests conducted during the compliance program. Support data are presented in the appendices to this report. All particulate was considered to be both PM_{10} and $PM_{2.5}$. Due to water droplets in the exhaust stream, sampling for filterable particulates by EPA Method 201A was not feasible.

Table 2.2-1 Particulate Results – Fan Hood

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
Date	6/20/11	6/21/11	6/21/11	
Time	1028-1435	0831-1240	1336-1746	
STACK GAS PARAMETERS				
Stack Temperature (°F)	120.0	119.5	118.8	119.4
Moisture Content (%)	13.00	12.88	12.75	12.87
Volumetric Flow Rate (acfm)	37,017	37,611	36,483	37,037
Volumetric Flow Rate (dscfm)	25,355	25,815	25,114	25,428
PARTICULATE EMISSIONS (PM_{10})				
Concentration (gr/dscf)	0.00289	0.00324	0.00255	0.0029
Emission Rate (lb/hr)	0.628	0.716	0.549	**0.63**
				Emission Limit: ≤ 0.82 lb/hr

Table 2.2-2 Particulate Results – Snifter Stack

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
Date	6/20/11	6/21/11	6/21/11	
Time	1031-1637	0829-1240	1335-1738	
STACK GAS PARAMETERS				
Stack Temperature (°F)	111.8	109.1	111.5	110.8
Moisture Content (%)	10.99	8.59	9.50	9.69
Volumetric Flow Rate (acfm)	5,539	5,644	5,689	5,624
Volumetric Flow Rate (dscfm)	3,937	4,140	4,113	4,063
PARTICULATE EMISSIONS (PM_{10})				
Concentration (gr/dscf)	0.000604	0.000607	0.000504	0.00057
Emission Rate (lb/hr)	0.0204	0.0215	0.0178	**0.020**
				Emission Limit: ≤ 0.013 lb/hr

Table 2.2-3 Particulate Results – $PM_{2.5}$ Emission Factors

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
FAN HOOD				
Emission Rate (lb/hr)	0.628	0.716	0.549	0.63
Product Process Rate (ton product/hr)	1.00	1.00	1.02	1.0
Feed Material Process Rate (ton feed/hr)	5.16	5.14	5.28	5.2
Emission Factor (lb/ton product)	0.628	0.715	0.538	**0.63**
Emission Factor (lb/ton feed)	0.122	0.139	0.104	**0.12**
SNIFTER STACK				
Emission Rate (lb/hr)	0.0204	0.0215	0.0178	0.020
Product Process Rate (ton product/hr)	1.00	1.00	1.02	1.0
Feed Material Process Rate (ton feed/hr)	5.15	5.14	5.27	5.2
Emission Factor (lb/ton product)	0.0204	0.0215	0.0174	**0.020**
Emission Factor (lb/ton feed)	0.00396	0.00419	0.00337	**0.0038**

Emission factors for $PM_{2.5}$ were determined by taking the measured $PM_{2.5}$ emission rate and dividing by the calculated process rate for both product and raw potato feed material. The product process rate was calculated based on the measured raw potato feed rate to Dryers 1-3, the measured daily average moisture content of the dried potatoes, and an assumed moisture content of the raw potatoes of 79%. It was assumed that 1/3 of the raw potato feed was directed to Dryer #1 and that 14.5% of the raw potato feed from the weigh-belt is lost in the process before becoming product. The 1.0 ton per hour (tph) average process rate maintained during testing is 89% of the equivalent hourly average of 1.125 tph calculated from the permit maximum daily production rate. This is representative of the highest achievable and sustainable production rate for the facility under current operating conditions (i.e., worst-case normal).

3.0 TESTING METHODS AND PROCEDURES

3.1 Testing Methods

Table 3.1-1 specifies the test methods used for the emission unit and emission species. Unless deviations are specified in Section 3.4 below, all tests conformed to the applicable methodologies specified in 40 CFR Parts 51 and 60 and the U.S. Environmental Protection Agency Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 3. Particulate testing consisted of three valid reference method test runs. Emission limits and emission factors were calculated as the average of the three valid test runs. Each test run was conducted for a minimum of 240 minutes. A minimum sample volume of 120 dry standard cubic feet was collected for each fan hood test run and a minimum sample volume of 140 dry standard cubic feet was collected for each snifter stack test run.

Table 3.1-1 Test Methods

EMISSION UNIT	EMISSION SPECIES	TEST METHOD
Drum Dryer #1 (Fan Hood & Snifter Stack)	$PM_{10}/PM_{2.5}$	EPA Methods 1-4 and 5/202

3.2 Sampling Equipment Description

Sampling trains for the particulate tests conformed to the guidelines specified in EPA Methods 5/202 of 40 CFR Parts 51 and 60. A diagram of this sampling train is presented in Figure 3.2-1. The Method 5/202 sampling train employed a Teflon-lined stainless steel sampling nozzle and quartz probe liner.

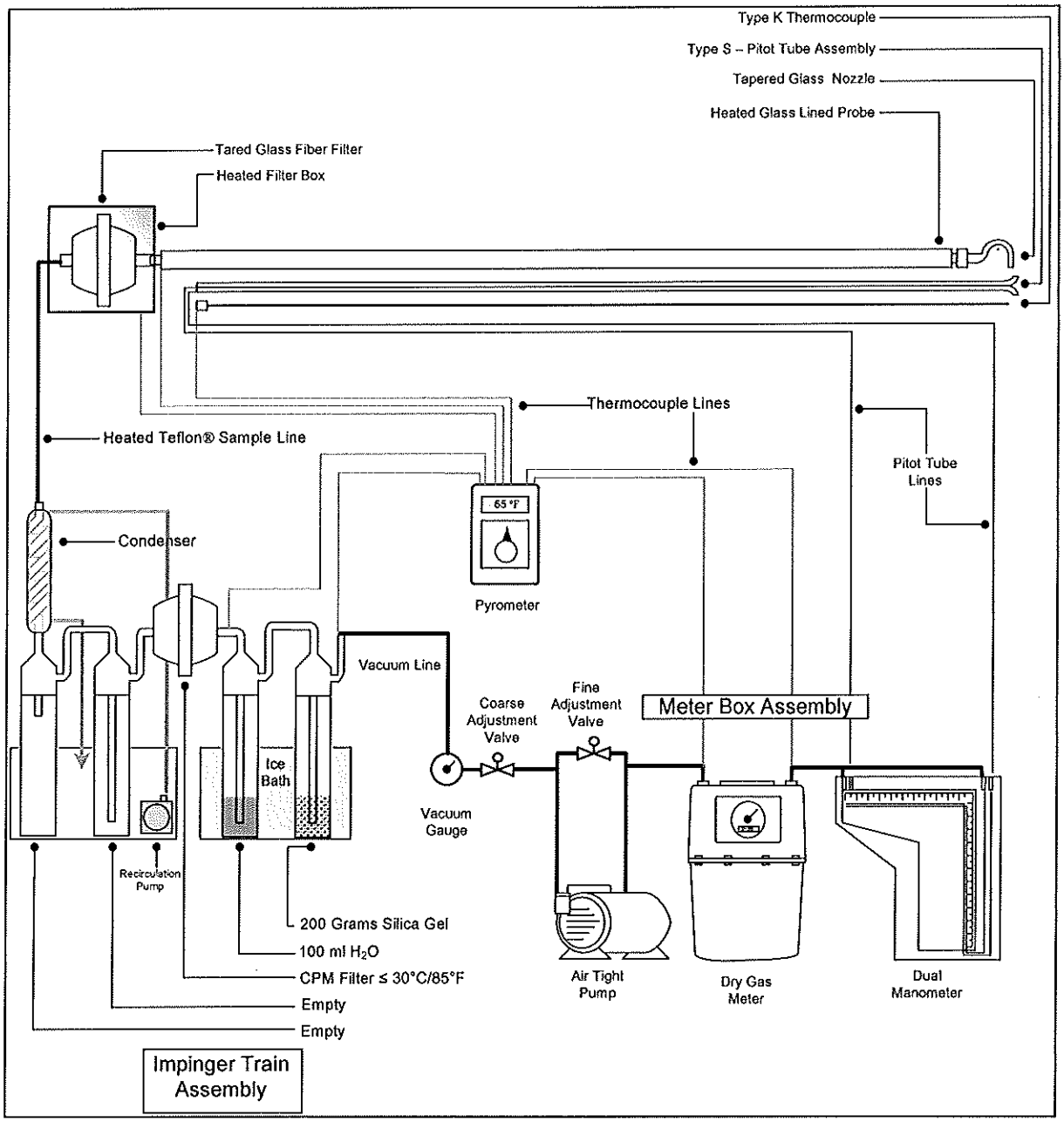


Figure 3.2-1 EPA Method 5/202 Sampling Train

3.3 Method Descriptions

The following is a brief summary of each of the applicable test methodologies employed during the testing program. Complete method descriptions are presented in the appendices to 40 CFR Parts 51 and 60.

3.3.1 EPA Method 1: Sampling and Velocity Traverses for Stationary Sources

Prior to the source test, a site assessment was performed in order to locate sample points for obtaining the best representative measurements of pollution concentrations and volumetric flow rates. EPA Method 1 takes into account duct area, straight run and cyclonic or stratified flow patterns.

3.3.2 EPA Method 2: Determination of Velocity and Volumetric flow Rates

EPA Method 2 was used to determine stack gas velocity and volumetric flow rates. A calibrated type-S Pitot tube was connected to an inclined manometer and leak checked. Stack gas temperature and manometer displacement (ΔP) were recorded at each traverse point and a duct static pressure was also measured and recorded. Stack gas velocity and volumetric flow rate were calculated in accordance with EPA Method 2.

3.3.3 EPA Method 3: Gas Analysis for the Determination of Dry Molecular Weight

Concurrent with each particulate sample run, an integrated gas sample was drawn through the sample train and collected into a Tedlar bag. The stack gas sample was analyzed by Orsat for fixed gas composition and determination of stack gas dry molecular weight.

3.3.4 EPA Method 4: Determination of Stack Gas Moisture Content

Stack gas moisture content was determined by removing the moisture from the stack gas by drawing a known amount of stack gas through chilled impingers. Impinger weights were determined prior to and following sampling. Stack gas moisture content was determined from the mass of the water collected and the sample gas volume.

3.3.5 EPA Method 5/202: Determination of Total Particulate Emissions

Preliminary measurements were made prior to conducting the particulate test based on EPA Methods 1, 2, and 3 as described previously. Percent water was determined by a psychrometric chart or from combustion analysis of the stack gases. These preliminary results were used to determine an appropriate nozzle size for isokinetic sampling.

Stack gas samples were drawn isokinetically through a heated probe to a heated, tared filter where particulate matter was removed. The sample was then drawn through a series of four impingers for collection of condensable particulate matter (CPM) and moisture determination (Figure 4.2-3). CPM was collected in the first two impingers of the sampling train, as well as on a CPM filter, located between the second and third impingers. The contents of the condenser, first two impingers, and the front half of the CPM filter housing were extracted with water, acetone, and hexane and the organic and aqueous fractions were taken to dryness and the residues weighed. The total of both fractions represents the total CPM. The particulate mass collected on the CPM filter was also extracted and combined with the organic and aqueous fractions.

3.4 Method Deviations

AEC performed the post-test meter box calibrations based on the guidelines of EPA Alternative Method 009. The alternative post-test calibration procedure is based on the principles of the optional pretest orifice meter coefficient check in Section 4.4.1 of Method 5. This calibration procedure is highly desirable for two reasons: (1) it eliminates questions about the possibility of the damage to the metering system occurring during transport and (2) it eliminates travel costs for a retest if the metering system fails the post-test calibration.

Sampling for filterable particulates was performed by EPA Method 5, rather than EPA Method 201A as proposed in the test protocol. Sampling for filterable particulates by EPA Method 201A was not feasible due to water droplets in the exhaust stream of each stack.

Upon analysis, the integrated bag samples were found to contain ambient levels of oxygen and carbon dioxide. A stack gas dry molecular weight of 29.0 g/g-mol was therefore assumed.

4.0 EMISSION UNIT INFORMATION

4.1 Process Conditions

The unit and control equipment operated normally throughout the test period, there were no upset conditions. The plant process and control equipment data are presented in Appendix D. The unit is fired on natural gas. Initial moisture content of the raw potatoes was assumed to be 79%, based on typical moisture found in potatoes grown near Heyburn, Idaho. The final moisture content of the dried potatoes ranged from 7.055% to 7.22%.

4.2 Emission Point Information

Particulate traverse point locations were determined following EPA Method 1 guidelines prior to testing. The port locations and the traverse point locations are shown in Tables 4.2-1 and 4.2-2 and Figures 4.2-1 and 4.2-2.

Table 4.2-1 Traverse Point Locations for Fan Hood Stack Outlet

Particulate Traverses (Stack Diameter = 42.0 inches) 12 Traverse Points per Axis			
POINT (WITHOUT COUPLING)	DISTANCE FROM STACK WALL (IN)	POINT (WITHOUT COUPLING)	DISTANCE FROM STACK WALL (IN)
1	1.00	7	27.05
2	2.81	8	31.50
3	4.96	9	34.57
4	7.43	10	37.04
5	10.50	11	39.19
6	14.95	12	41.00

Table 4.2-2 Traverse Point Locations for Snifter Stack Outlet

Particulate Traverses (Stack Diameter = 18.0 inches) 12 Traverse Points per Axis			
POINT (WITHOUT COUPLING)	DISTANCE FROM STACK WALL (IN)	POINT (WITHOUT COUPLING)	DISTANCE FROM STACK WALL (IN)
1	0.50	7	11.59
2	1.21	8	13.50
3	2.12	9	14.81
4	3.19	10	15.88
5	4.50	11	16.79
6	6.41	12	17.50

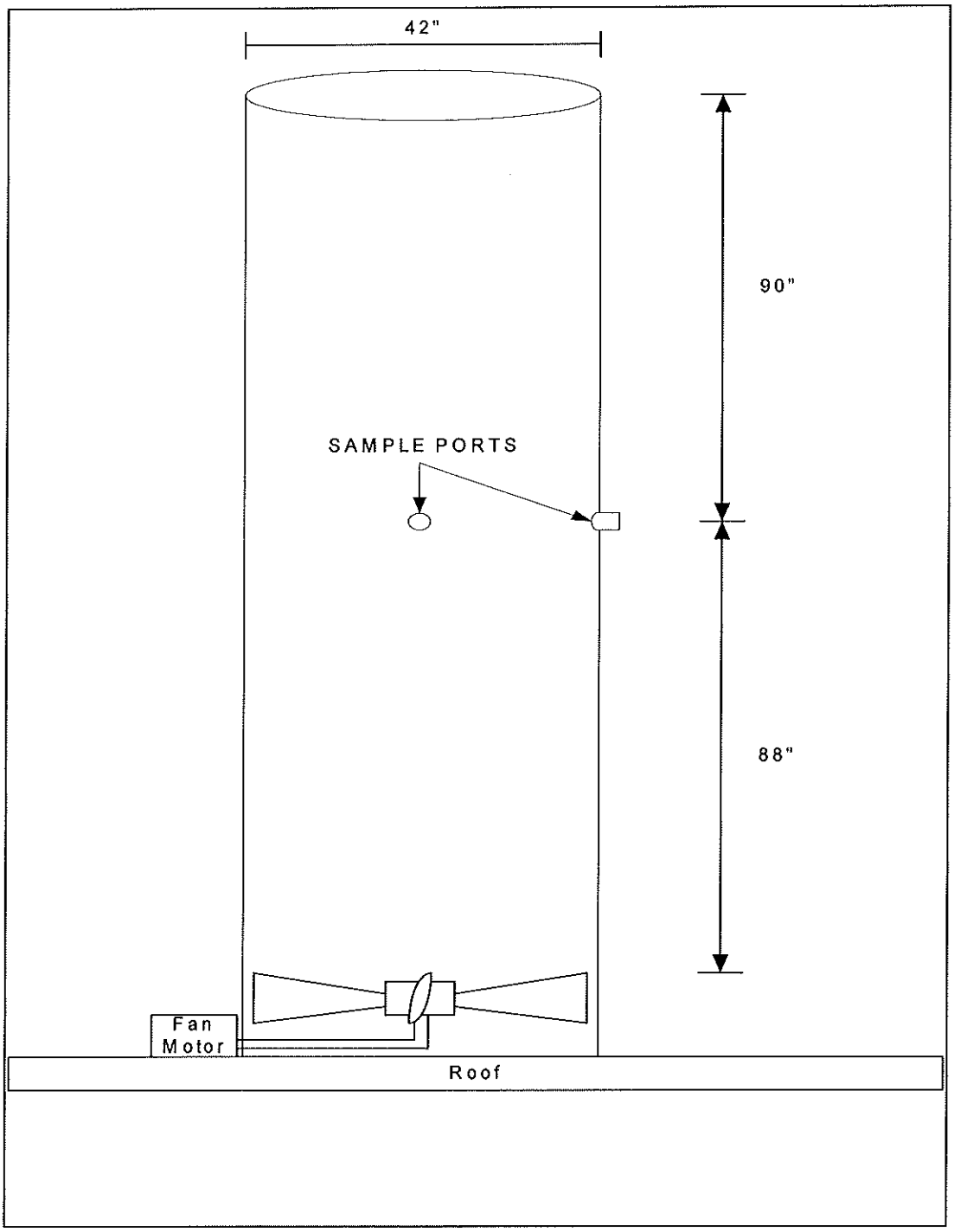


Figure 4.2-1 Fan Hood Stack Outlet

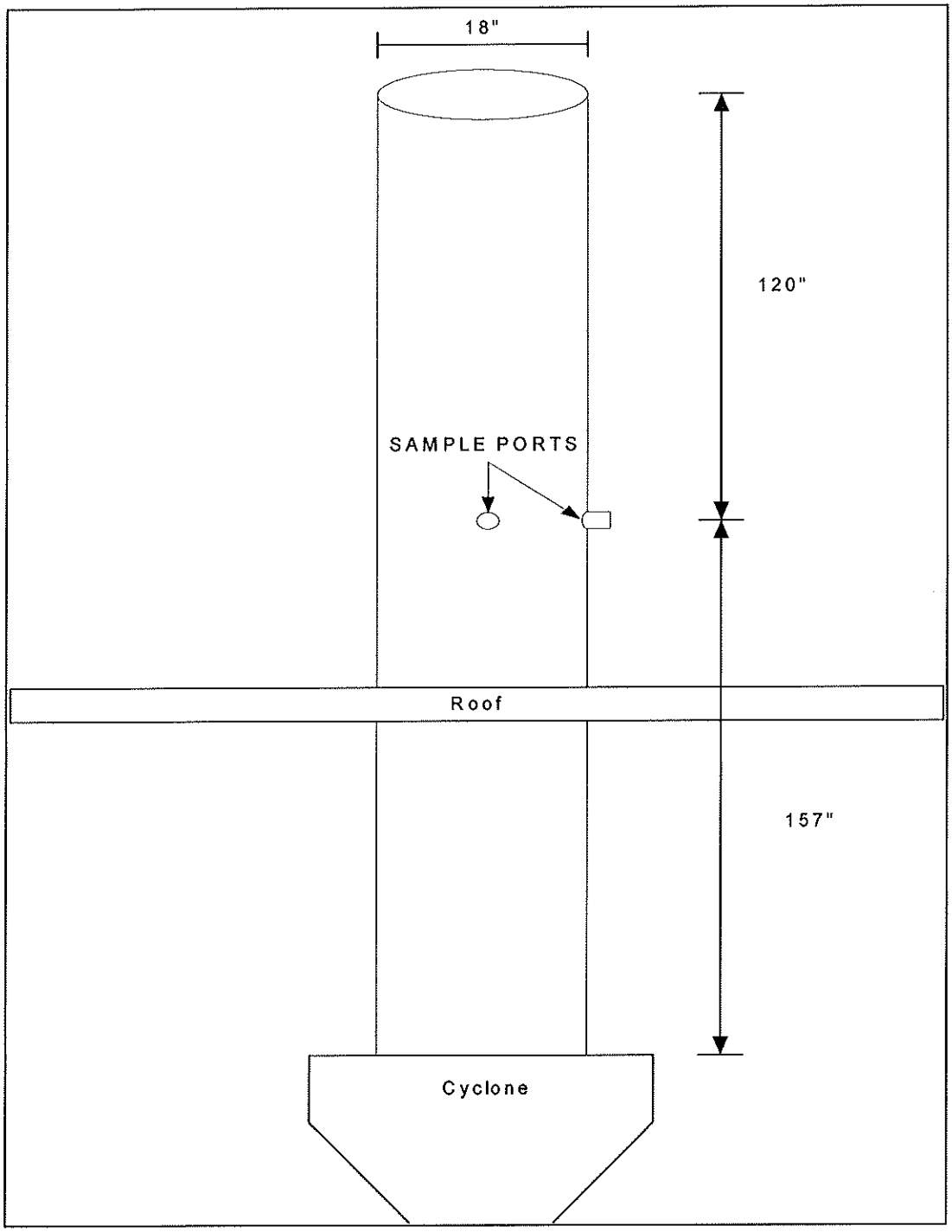


Figure 4.2-2 Snifter Stack Outlet

5.0 QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance procedures were performed in accordance with those listed in the appropriate test method and the *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 3.* Complete equipment certification and calibration information is presented in Appendix E. The quality assurance procedures included, but were not limited to the following:

- Inspection of the type-S Pitot tube prior to and following use to confirm proper design criteria specified in EPA Method 2,
- Calibration of the stack temperature sensor against an ASTM thermometer prior to sampling,
- Leak checks of the sampling system after each sample run including the sample train, manometers and Pitot tube lines,
- Calibration of the meter box and dry gas meter on a quarterly basis at a minimum,
- Inspection of the calibrated nozzle prior to and after each sample run to ensure its integrity,
- Assurance that the probe and filter holder heaters operated properly,
- Preparation and analysis of a full set of reagent blanks and field blanks.

APPENDIX A

Test Results

TEST DATA SUMMARY

Client: Gem State Processing
Test Date: 6/20-21/2011
Emissions Unit: Dryer 1 Stack
Project No.: B.A11190.00

RUN DATA

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	21-Jun-11	21-Jun-11	
Start Time	10:28 AM	8:31 AM	1:36 PM	
Stop Time	2:35 PM	12:40 PM	5:46 PM	
Area of Stack (ft^2)	9.62	9.62	9.62	
Nozzle Diameter (in.)	0.190	0.190	0.190	
Nozzle Area (ft^2)	0.00020	0.00020	0.00020	
Pitot Tube Calibration Coefficient (C_p)	0.84	0.84	0.84	
Dry Gas Meter Calibration Factor (Y)	1.0041	1.0041	1.0041	
Dry Gas Meter Delta H@ ("H_2O)	2.0339	2.0339	2.0339	
Barometric Pressure ("Hg)	25.80	25.80	25.80	
Sampling Time (min)	240	240	240	240
Total Dry Gas Volume (dcf)	143.708	153.378	154.390	150.492
Corrected Dry Gas Meter Volume (dscf)	121.189	128.424	125.808	125.140
Dry Gas Meter Temperature (°F)	83.6	87.7	102.8	91.4
Dry Gas Meter Temperature (°R)	543.6	547.7	562.8	551.4
Average ΔH ("H_2O)	1.11	1.23	1.23	1.19
Isokinetic Variation (%)	97.4	101.4	102.1	100.3

STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE (Method 2)

	Run 1	Run 2	Run 3	Averages
Average Stack Temperature (°F)	120.0	119.5	118.8	119.4
Average Stack Temperature (°R)	580.0	579.5	578.8	579.4
Stack Static Pressure ("H_20)	0.67	0.67	0.67	0.67
Stack Gas Pressure ("Hg)	25.85	25.85	25.85	25.85
Average ΔP ("H_2O)	0.98	1.02	0.96	0.99
Average ΔP Square Root	0.99	1.01	0.98	0.99
Stack Gas Velocity (ft/sec)	64.15	65.18	63.23	64.19
Stack Gas Volumetric Flow Rate (acfm)	37,034	37,628	36,500	37,054
Stack Gas Volumetric Flow Rate (scfm)	29,129	29,618	28,769	29,172
Stack Gas Volumetric Flow Rate (dscfm)	25,343	25,803	25,102	25,416

STACK GAS MOLECULAR WEIGHT (Method 3)

	Run 1	Run 2	Run 3	Averages
Net Volume of O_2 (%)	Ambient	Ambient	Ambient	Ambient
Net volume of CO_2 (%)	Ambient	Ambient	Ambient	Ambient
Net Volume of N_2 and CO (%)	Ambient	Ambient	Ambient	Ambient
Molecular Weight, Dry (lb/lb-mole)	29.00	29.00	29.00	29.00
Molecular Weight, Wet (lb/lb-mole)	27.57	27.58	27.60	27.58

STACK GAS MOISTURE CONTENT (Method 4)

	Run 1	Run 2	Run 3	Averages
Total Water Collected (g)	384.7	403.5	390.5	392.9
Volume of Rinse (ml)	0.0	0.0	0.0	0.0
Net Volume of Water Collected (ml)	384.7	403.5	390.5	392.9
Corrected Volume of Water Collected (scf)	18.104	18.989	18.377	18.490
Water Vapor (B_{WS})	0.1300	0.1288	0.1275	0.1287
Moisture Factor (1- B_{WS})	0.8700	0.8712	0.8725	0.8713
Saturated % Moisture (%)	13.30	13.15	12.86	13.10
Stack Moisture (%)	13.00	12.88	12.75	12.87

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 6/20-21/2011
Emissions Unit: Dryer 1 Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	21-Jun-11	21-Jun-11	
Start Time	10:28 AM	8:31 AM	1:36 PM	
End Time	2:35 PM	12:40 PM	5:46 PM	
Corrected DGM (dscf)	121.189	128.424	125.808	125.140
Stack Flow Rate (dscfm)	25,343	25,803	25,102	25,416
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.16	5.14	5.28	5.2

Filterable Particulate Laboratory Results (Method 5)

	Run 1	Run 2	Run 3	Averages
Filter Net Mass Gain (g)	0.0032	0.0039	0.0031	0.0034
Net Mass of Filter Blank (g)	0.0000	0.0000	0.0000	0.0000
Total Filter Mass (g)	0.0032	0.0039	0.0031	0.0034
Probe & Nozzle Acetone Rinse Net Mass (g)	0.0152	0.0166	0.0129	0.0149
Probe & Nozzle Acetone Rinse Volume (ml)	80	60	75	72
Probe & Nozzle Acetone Rinse Blank Net Mass (g)	0.0001	0.0001	0.0001	0.0001
Probe & Nozzle Acetone Rinse Blank Volume (ml)	50	50	50	50
Acetone Density (g/ml)	0.79	0.79	0.79	0.79
Probe & Nozzle Rinse Acetone Blank Concentration (g/g)	0.0000	0.0000	0.0000	0.0000
Probe & Nozzle Acetone Rinse Blank Mass (g)	0.0002	0.0001	0.0002	0.0001
Maximum Acetone Rinse Blank Mass (g)	0.0006	0.0005	0.0006	0.0006
Probe & Nozzle Acetone Rinse Mass (g)	0.0150	0.0165	0.0128	0.0148
Filter, Probe, & Nozzle Acetone Rinse Mass (g)	0.0182	0.0204	0.0159	0.0182
Filter, Probe, & Nozzle Acetone Rinse Mass (mg)	18.2	20.4	15.9	18.2

Filterable Particulate Concentrations and Emission Rates (Method 5)

	Run 1	Run 2	Run 3	Averages
Total Filterable Particulate Concentration (gr/dscf)	0.00232	0.00244	0.00194	0.0022
Total Filterable Particulate Emission Rate (lb/hr)	0.503	0.540	0.417	0.49
Total Filterable Particulate Emission Rate (lb/product ton)	0.503	0.540	0.409	0.48
Total Filterable Particulate Emission Rate (lb/feed ton)	0.0976	0.105	0.0791	0.094

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 6/20-21/2011
Emissions Unit: Dryer 1 Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	21-Jun-11	21-Jun-11	
Start Time	10:28 AM	8:31 AM	1:36 PM	
End Time	2:35 PM	12:40 PM	5:46 PM	
Corrected DGM (dscf)	121.189	128.424	125.808	125.140
Stack Flow Rate (dscfm)	25,343	25,803	25,102	25,416
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.16	5.14	5.28	5.2

Organic Condensable Laboratory Results (Method 202)

	Run 1	Run 2	Run 3	Averages
Organic Fraction Net Mass (g)	0.0023	0.0035	0.0028	0.0029
Organic Fraction Volume (ml)	125	110	110	115
Organic Fraction Blank Net Mass (g)	0.0004	0.0004	0.0004	0.0004
Organic Fraction Blank Volume (ml)	80	80	80	80
Organic Fraction Blank Concentration (g/g)	0.0000	0.0000	0.0000	0.0000
Organic Fraction Blank Mass (g)	0.0006	0.0006	0.0006	0.0006
Organic Fraction Mass (g)	0.0019	0.0031	0.0024	0.0025
Organic Fraction Mass (mg)	1.90	3.10	2.40	2.47

Organic Condensable Concentrations and Emission Rates (Method 202)

	Run 1	Run 2	Run 3	Averages
Organic Fraction Concentration (gr/dscf)	0.000241	0.000372	0.000294	0.00030
Organic Fraction Emission Rate (lb/hr)	0.0524	0.0822	0.0632	0.066
Organic Fraction Emission Rate (lb/product ton)	0.0524	0.0822	0.0620	0.066
Organic Fraction Emission Rate (lb/feed ton)	0.0102	0.0160	0.0120	0.013

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 6/20-21/2011
Emissions Unit: Dryer 1 Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	21-Jun-11	21-Jun-11	
Start Time	10:28 AM	8:31 AM	1:36 PM	
End Time	2:35 PM	12:40 PM	5:46 PM	
Corrected DGM (dscf)	121.189	128.424	125.808	125.140
Stack Flow Rate (dscfm)	25,343	25,803	25,102	25,416
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.16	5.14	5.28	5.2

Inorganic Condensable Laboratory Results (Method 202)

	Run 1	Run 2	Run 3	Averages
Inorganic Fraction Net Mass (g)	0.0031	0.0040	0.0031	0.0034
Inorganic Fraction Volume (ml)	670	625	640	645
Inorganic Fraction Blank Net Mass (g)	0.0005	0.0005	0.0005	0.0005
Inorganic Fraction Blank Volume (ml)	180	180	180	180
Inorganic Fraction Mass (g)	0.0026	0.0035	0.0026	0.0029
Inorganic Fraction Mass (mg)	2.6	3.5	2.6	2.9

Inorganic Condensable Concentrations and Emission Rates (Method 202)

	Run 1	Run 2	Run 3	Averages
Inorganic Fraction Concentration (gr/dscf)	0.000330	0.000420	0.000318	0.00036
Inorganic Fraction Emission Rate (lb/hr)	0.0718	0.0928	0.0685	0.078
Inorganic Fraction Emission Rate (lb/product ton)	0.0718	0.0928	0.0671	0.077
Inorganic Fraction Emission Rate (lb/feed ton)	0.0139	0.0181	0.0130	0.015

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 6/20-21/2011
Emissions Unit: Dryer 1 Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	21-Jun-11	21-Jun-11	
Start Time	10:28 AM	8:31 AM	1:36 PM	
End Time	2:35 PM	12:40 PM	5:46 PM	
Corrected DGM (dscf)	121.189	128.424	125.808	125.140
Stack Flow Rate (dscfm)	25,343	25,803	25,102	25,416
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.16	5.14	5.28	5.2

Condensable Concentrations and Emission Rates

	Run 1	Run 2	Run 3	Averages
Condensable Fractions Mass (g)	0.0045	0.0066	0.0050	0.0054
Condensable Fractions Mass (mg)	4.5	6.6	5.0	5.4
Condensable Fractions Concentration (gr/dscf)	0.000572	0.000791	0.000612	0.00066
Condensable Fractions Emission Rate (lb/hr)	0.124	0.175	0.132	0.14
Condensable Fractions Emission Rate (lb/product ton)	0.124	0.175	0.129	0.14
Condensable Fractions Emission Rate (lb/feed ton)	0.0241	0.0340	0.0249	0.028

Filterable and Condensable Concentrations and Emission Rates

	Run 1	Run 2	Run 3	Averages
Particulate Mass (g)	0.0227	0.0270	0.0209	0.0235
Particulate Mass (mg)	22.7	27.0	20.9	23.5
Particulate Concentration (gr/dscf)	0.00289	0.00324	0.00255	0.0029
Particulate Emission Rate (lb/hr)	0.628	0.715	0.549	0.63
Particulate Emission Factor (lb/product ton)	0.628	0.715	0.538	0.63
Particulate Emission Factor (lb/feed ton)	0.122	0.139	0.104	0.12

TEST DATA SUMMARY

Client: Gem State Processing
Test Date: 20-Jun-11
Emissions Unit: Dryer 1 Snifter Stack
Project No.: B.A11190.00

RUN DATA

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	20-Jun-11	20-Jun-11	
Start Time	10:31 AM	8:29 AM	1:35 PM	
Stop Time	4:37 PM	12:40 PM	5:38 PM	
Area of Stack (ft^2)	1.77	1.77	1.77	
Nozzle Diameter (in.)	0.230	0.230	0.230	
Nozzle Area (ft^2)	0.00029	0.00029	0.00029	
Pitot Tube Calibration Coefficient (C_p)	0.84	0.84	0.84	
Dry Gas Meter Calibration Factor (Y)	1.0065	1.0065	1.0065	
Dry Gas Meter Delta H@ ("H_2O)	1.8050	1.8050	1.8050	
Barometric Pressure ("Hg)	25.80	25.80	25.80	
Sampling Time (min)	240	240	240	240
Total Dry Gas Volume (dcf)	174.514	191.035	197.425	187.658
Corrected Dry Gas Meter Volume (dscf)	147.366	161.947	163.769	157.694
Dry Gas Meter Temperature (°F)	84.8	82.9	94.9	87.5
Dry Gas Meter Temperature (°R)	544.8	542.9	554.9	547.5
Average ΔH ("H_2O)	1.50	1.63	1.71	1.61
Isokinetic Variation (%)	95.6	99.9	101.7	99.0

STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE (Method 2)

	Run 1	Run 2	Run 3	Averages
Average Stack Temperature (°F)	111.8	109.1	111.5	110.8
Average Stack Temperature (°R)	571.8	569.1	571.5	570.8
Stack Static Pressure ("H_20)	1.00	1.00	1.00	1.00
Stack Gas Pressure ("Hg)	25.87	25.87	25.87	25.87
Average ΔP ("H_2O)	0.71	0.71	0.71	0.71
Average ΔP Square Root	0.82	0.84	0.84	0.83
Stack Gas Velocity (ft/sec)	52.24	53.23	53.66	53.04
Stack Gas Volumetric Flow Rate (acfm)	5,539	5,644	5,689	5,624
Stack Gas Volumetric Flow Rate (scfm)	4,423	4,529	4,545	4,499
Stack Gas Volumetric Flow Rate (dscfm)	3,937	4,140	4,113	4,063

STACK GAS MOLECULAR WEIGHT (Method 3)

	Run 1	Run 2	Run 3	Averages
Net Volume of O_2 (%)	Ambient	Ambient	Ambient	Ambient
Net volume of CO_2 (%)	Ambient	Ambient	Ambient	Ambient
Net Volume of N_2 and CO (%)	Ambient	Ambient	Ambient	Ambient
Molecular Weight, Dry (lb/lb-mole)	29.00	29.00	29.00	29.00
Molecular Weight, Wet (lb/lb-mole)	27.79	28.06	27.95	27.93

STACK GAS MOISTURE CONTENT (Method 4)

	Run 1	Run 2	Run 3	Averages
Total Water Collected (g)	386.5	323.2	365.5	358.4
Volume of Rinse (ml)	0.0	0.0	0.0	0.0
Net Volume of Water Collected (ml)	386.5	323.2	365.5	358.4
Corrected Volume of Water Collected (scf)	18.189	15.210	17.200	16.866
Water Vapor (B_{WS})	0.1099	0.0859	0.0950	0.0969
Moisture Factor (1- B_{WS})	0.8901	0.9141	0.9050	0.9031
Saturated % Moisture (%)	10.55	9.76	10.48	10.26
Stack Moisture (%)	10.99	8.59	9.50	9.69

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 20-Jun-11
Emissions Unit: Dryer 1 Snifter Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	20-Jun-11	20-Jun-11	
Start Time	10:31 AM	8:29 AM	1:35 PM	
End Time	4:37 PM	12:40 PM	5:38 PM	
Corrected DGM (dscf)	147.366	161.947	163.769	157.694
Stack Flow Rate (dscfm)	3,937	4,140	4,113	4,063
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.15	5.14	5.27	5.2

Filterable Particulate Laboratory Results (Method 5)

	Run 1	Run 2	Run 3	Averages
Filter Net Mass Gain (g)	0.0005	0.0002	0.0004	0.0004
Net Mass of Filter Blank (g)	0.0000	0.0000	0.0000	0.0000
Total Filter Mass (g)	0.0005	0.0002	0.0004	0.0004
Probe & Nozzle Acetone Rinse Net Mass (g)	0.0025	0.0035	0.0024	0.0028
Probe & Nozzle Acetone Rinse Volume (ml)	60	60	70	63
Probe & Nozzle Acetone Rinse Blank Net Mass (g)	0.0001	0.0001	0.0001	0.0001
Probe & Nozzle Acetone Rinse Blank Volume (ml)	50	50	50	50
Acetone Density (g/ml)	0.79	0.79	0.79	0.79
Probe & Nozzle Rinse Acetone Blank Concentration (g/g)	0.0000	0.0000	0.0000	0.0000
Probe & Nozzle Acetone Rinse Blank Mass (g)	0.0001	0.0001	0.0001	0.0001
Maximum Acetone Rinse Blank Mass (g)	0.0005	0.0005	0.0006	0.0005
Probe & Nozzle Acetone Rinse Mass (g)	0.0024	0.0034	0.0023	0.0027
Filter, Probe, & Nozzle Acetone Rinse Mass (g)	0.0029	0.0036	0.0027	0.0030
Filter, Probe, & Nozzle Acetone Rinse Mass (mg)	2.88	3.58	2.66	3.04

Filterable Particulate Concentrations and Emission Rates (Method 5)

	Run 1	Run 2	Run 3	Averages
Total Filterable Particulate Concentration (gr/dscf)	0.000301	0.000340	0.000250	0.00030
Total Filterable Particulate Emission Rate (lb/hr)	0.0102	0.0121	0.00882	0.010
Total Filterable Particulate Emission Rate (lb/product ton)	0.0102	0.0121	0.00864	0.010
Total Filterable Particulate Emission Rate (lb/feed ton)	0.00197	0.00235	0.00167	0.0020

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 20-Jun-11
Emissions Unit: Dryer 1 Snifter Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	20-Jun-11	20-Jun-11	
Start Time	10:31 AM	8:29 AM	1:35 PM	
End Time	4:37 PM	12:40 PM	5:38 PM	
Corrected DGM (dscf)	147.366	161.947	163.769	157.694
Stack Flow Rate (dscfm)	3,937	4,140	4,113	4,063
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.15	5.14	5.27	5.2

Organic Condensable Laboratory Results (Method 202)

	Run 1	Run 2	Run 3	Averages
Organic Fraction Net Mass (g)	0.0016	0.0015	0.0018	0.0016
Organic Fraction Volume (ml)	125	125	125	125
Organic Fraction Blank Net Mass (g)	0.0004	0.0004	0.0004	0.0004
Organic Fraction Blank Volume (ml)	80	80	80	80
Organic Fraction Blank Concentration (g/g)	0.0000	0.0000	0.0000	0.0000
Organic Fraction Blank Mass (g)	0.0006	0.0006	0.0006	0.0006
Organic Fraction Mass (g)	0.0012	0.0011	0.0014	0.0012
Organic Fraction Mass (mg)	1.2	1.1	1.4	1.2

Organic Condensable Concentrations and Emission Rates (Method 202)

	Run 1	Run 2	Run 3	Averages
Organic Fraction Concentration (gr/dscf)	0.000125	0.000105	0.000132	0.00012
Organic Fraction Emission Rate (lb/hr)	0.00423	0.00371	0.00464	0.0042
Organic Fraction Emission Rate (lb/product ton)	0.00423	0.00371	0.00455	0.0042
Organic Fraction Emission Rate (lb/feed ton)	0.000822	0.000722	0.000881	0.00081

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 20-Jun-11
Emissions Unit: Dryer 1 Snifter Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	20-Jun-11	20-Jun-11	
Start Time	10:31 AM	8:29 AM	1:35 PM	
End Time	4:37 PM	12:40 PM	5:38 PM	
Corrected DGM (dscf)	147.366	161.947	163.769	157.694
Stack Flow Rate (dscfm)	3,937	4,140	4,113	4,063
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.15	5.14	5.27	5.2

Inorganic Condensable Laboratory Results (Method 202)

	Run 1	Run 2	Run 3	Averages
Inorganic Fraction Net Mass (g)	0.0022	0.0022	0.0018	0.0021
Inorganic Fraction Volume (ml)	625	525	600	583
Inorganic Fraction Blank Net Mass (g)	0.0005	0.0005	0.0005	0.0005
Inorganic Fraction Blank Volume (ml)	180	180	180	180
Inorganic Fraction Mass (g)	0.0017	0.0017	0.0013	0.0016
Inorganic Fraction Mass (mg)	1.7	1.7	1.3	1.6

Inorganic Condensable Concentrations and Emission Rates (Method 202)

	Run 1	Run 2	Run 3	Averages
Inorganic Fraction Concentration (gr/dscf)	0.000178	0.000162	0.000122	0.00015
Inorganic Fraction Emission Rate (lb/hr)	0.00599	0.00574	0.00431	0.0053
Inorganic Fraction Emission Rate (lb/product ton)	0.00599	0.00574	0.00423	0.0053
Inorganic Fraction Emission Rate (lb/feed ton)	0.00116	0.00112	0.000818	0.0010

PARTICULATE DATA SUMMARY

Client: Gem State Processing
Test Date: 20-Jun-11
Emissions Unit: Dryer 1 Snifter Stack
Project No.: B.A11190.00

EPA Method 5 Test Results

	Run 1	Run 2	Run 3	Averages
Test Date	20-Jun-11	20-Jun-11	20-Jun-11	
Start Time	10:31 AM	8:29 AM	1:35 PM	
End Time	4:37 PM	12:40 PM	5:38 PM	
Corrected DGM (dscf)	147.366	161.947	163.769	157.694
Stack Flow Rate (dscfm)	3,937	4,140	4,113	4,063
Average Final Product Process Rate (product ton/hr)	1.00	1.00	1.02	1.0
Average Feed Material Process Rate (feed ton/hr)	5.15	5.14	5.27	5.2

Condensable Concentrations and Emission Rates

	Run 1	Run 2	Run 3	Averages
Condensable Fractions Mass (g)	0.0029	0.0028	0.0027	0.0028
Condensable Fractions Mass (mg)	2.9	2.8	2.7	2.8
Condensable Fractions Concentration (gr/dscf)	0.000303	0.000266	0.000254	0.00027
Condensable Fractions Emission Rate (lb/hr)	0.0102	0.00945	0.00895	0.0095
Condensable Fractions Emission Rate (lb/product ton)	0.0102	0.00945	0.00877	0.0095
Condensable Fractions Emission Rate (lb/feed ton)	0.00199	0.00184	0.00170	0.0018

Filterable and Condensable Concentrations and Emission Rates

	Run 1	Run 2	Run 3	Averages
Particulate Mass (g)	0.00578	0.00638	0.00536	0.00584
Particulate Mass (mg)	5.78	6.38	5.36	5.84
Particulate Concentration (gr/dscf)	0.000604	0.000607	0.000504	0.00057
Particulate Emission Rate (lb/hr)	0.0204	0.0215	0.0178	0.020
Particulate Emission Rate (lb/product ton)	0.0204	0.0215	0.0174	0.020
Particulate Emission Rate (lb/feed ton)	0.00396	0.00419	0.00337	0.0038

APPENDIX B

Field Data Sheets

Fan Hood

METHOD 2 - STACK GAS VELOCITY INITIAL TRAVERSE

Stack Shape: C=Circular, R=Rectangular	c
Stack Diameter, (in.)	42.00
Stack Cross-Sectional Area (ft^2)	9.62
Barometric Pressure ("Hg)	25.80
Pitot Tube Calibration Coefficient (Cp)	0.84
Stack Static Pressure	0.67

Traverse Point #	ΔP ("H_2O)	Stack Temp (°F)	√ΔP ("H_2O)	Cyclonic Flow Angle for ΔP=0	Cyclonic Flow Abs. Angle for ΔP=0
1	0.83	126	0.91	12	12
2	1.10	123	1.05	8	8
3	1.00	122	1.00	7	7
4	1.10	118	1.05	5	5
5	1.10	117	1.05	5	5
6	1.10	118	1.05	10	10
7	0.82	118	0.91	7	7
8	0.77	116	0.88	10	10
9	0.70	121	0.84	11	11
10	1.00	120	1.00	10	10
11	1.05	120	1.02	6	6
12	0.95	120	0.97	8	8
13	0.82	123	0.91	7	7
14	0.67	122	0.82	10	10
15	0.65	122	0.81	10	10
16	0.65	123	0.81	12	12
Averages	0.89	121	0.94	8.6	8.6

Net Volume of O_2 (%)	20.90
Net Volume of CO_2 (%)	0.50
Net Volume of N_2 and CO (%)	78.60
Dry Molecular Weight of Stack Gas Estimate (g/g-mol)	29.00
Percent Moisture in Stack Gas (Estimate) (% H_2O)	13.00%
(1-Bws)	0.8700
Wet stack gas molecular weight	27.57
Stack Temperature (°F)	121
Stack Temperature (°R)	581
Stack Static Pressure ("H_20)	0.67
Stack Gas Pressure ("Hg)	25.85
Avg. Delta P (ΔP)	0.89
Avg. of Sqrt of Delta P (ΔP)	0.94
Stack Gas Velocity (ft/s)	61.01
Stack Gas Volumetric Flow Rate (dscfm)	24,077

For Determination of Moisture by Wet Bulb/Dry Bulb

Dry Stack Temperature (°F)	120.0
Dry Stack Temperature (°C)	48.9
Wet Stack Temperature (°F)	110.0
Wet Stack Temperature (°C)	43.3
Stack Saturated Vapor Pressure (in. Hg)	2.5867
Stack Vapor Pressure (in. Hg)	2.4872
Stack Gas Moisture Content (%)	9.62%

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

INITIAL VELOCITY DATA

Client: Great State	Stack Diameter (in.): 18"	Meter Box ID: 5	Type of Stack (C/R): C
Unit: Dryer #1 Stack	Coupling Length (in.)	Meter Y_d: 1.0065	Diameter Upstream (A):
Location:	Static Pressure: + 0.67	Meter ΔH @: 1.8050	Diameter Downstream (B):
Date: 6-20-11	Pbar: 25.8	Pitot Tube C_P: 0.84	No. of Ports:
Technician:	Assumed Moisture:	Pitot Tube #:	Est. Dry Mol. Wt.:

Traverse Points			Port Selection															
			A				B				C				D			
#	W/O Coup	W Coup	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0
1			126	.83		12	121	0.70		11								
2			123	1.10		8	120	1.00		10								
3			122	1.00		7	120	1.05		6								
4			118	1.10		5	120	0.95		8								
5			117	1.10		5	123	0.82		7								
6			118	1.10		10	122	0.67		10								
7			118	0.82		7	122	0.65		10								
8			116	0.77		10	123	0.65		12								

Stack Diagram	Port Location	Additional Information
		Wet Bulb Temp. (°F)
		Dry Bulb Temp. (°F)

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	10:28 AM	Emission Unit:	Dryer 1 Stack
Stop Time:	2:35 PM	Project No.:	B.A11190.00
Run	1		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				27.484	In	Out				
1	10.00	1.00	1.13	120	32.450	76	72	4.263	64.78	81.5	0.50
2	20.00	1.00	1.13	119	38.535	77	72	5.219	64.73	99.6	0.61
3	30.00	0.95	1.07	123	44.540	80	74	5.126	63.31	100.7	0.60
4	40.00	1.10	1.23	119	50.900	83	76	5.406	67.89	98.4	0.64
5	50.00	1.00	1.13	121	57.020	85	77	5.186	64.84	99.2	0.61
6	60.00	0.88	0.99	120	62.705	86	79	4.802	60.77	97.8	0.57
7	70.00	0.84	0.95	117	68.240	86	80	4.671	59.22	97.1	0.55
8	80.00	0.80	0.90	120	73.635	89	84	4.523	57.94	96.6	0.54
9	90.00	0.95	1.07	117	79.500	90	81	4.928	62.98	96.4	0.59
10	100.00	1.00	1.13	118	85.590	86	81	5.137	64.67	98.0	0.61
11	110.00	1.00	1.13	122	91.750	86	80	5.201	64.89	99.5	0.62
12	120.00	1.10	1.23	116	98.047	86	81	5.313	67.71	96.5	0.63
13	130.00	1.20	1.36	123	104.595	84	81	5.537	71.15	96.8	0.65
14	140.00	1.00	1.13	122	110.680	87	82	5.123	64.89	98.1	0.61
15	150.00	1.10	1.23	121	116.900	88	82	5.234	68.00	95.4	0.62
16	160.00	1.00	1.13	120	123.060	88	82	5.182	64.78	99.0	0.62
17	170.00	1.00	1.13	120	129.220	89	82	5.177	64.78	98.9	0.62
18	180.00	1.00	1.13	120	135.420	89	83	5.206	64.78	99.5	0.62
19	190.00	1.10	1.23	120	141.735	89	82	5.309	67.95	96.7	0.63
20	200.00	1.00	1.13	120	147.800	89	84	5.088	64.78	97.2	0.61
21	210.00	0.90	1.03	121	153.700	89	84	4.948	61.51	99.7	0.59
22	220.00	0.90	1.03	121	159.540	90	85	4.889	61.51	98.5	0.58
23	230.00	0.90	1.03	121	165.500	91	86	4.980	61.51	100.4	0.60
24	240.00	0.87	0.98	118	171.192	93	87	4.743	60.32	97.0	0.57
Max/Avg.	240.00	0.98	1.11	120	143.708	84		5.050	64.16	97.4	0.60

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	10:28 AM	Emission Unit:	Dryer 1 Stack
Stop Time:	2:35 PM	Project No.:	B.A11190.00
Run	1		

Sampling Time, min	240	Meter Calibration Factor, Y	1.0041	H_2O Collected, ml	384.7
Number of Sample Points	24	Nozzle Area, ft^2	0.00020	Net H_20 Collected, V_{lc}, ml	384.7
O_2, %	Ambient	Corrected DGM, $V_{m(std)}$, dscf	121.189	Water Vapor Volume, $V_{w(std)}$, scf	18.10
CO_2, %	Ambient	Average ΔP, "H_2O	0.98	Water Vapor, B_{ws}	0.1300
N_2 & CO, %	Ambient	Average Square Root of ΔP	0.99	Moisture Factor, 1- B_{ws}	0.8700
Barometric Pressure	25.80	Average ΔH, "H_2O	1.11	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	0.67	Stack Temperature, T_s, °R	580	Wet Molecular Weight, M_s, lb/lb-mole	27.57
Stack Pressure, P_s, "Hg	25.85	Meter Temperature, T_m, °R	544		
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	64.15	% Isokinetic	97.4

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	942.0	609.6	332.4
H_2O	668.5	669.8	-1.3
Empty	768.1	753.1	15.0
Silica Gel	970.8	932.2	38.6
		Sub Total	384.7
		Sample Line Rinse	0.0
		Total	384.7

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	9.62
Stack Flow Rate, acf/min	37,034
Stack Flow Rate, acf/hr	2,222,057
Stack Flow Rate, scf/min	29,129
Stack Flow Rate, scf/hr	1,747,748
Stack Flow Rate, dscf/min	25,343
Stack Flow Rate, dscf/hr	1,520,593

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

Client: OEM STATE	Meter Box ID: 95	Stack Diameter (in.): 42"	Test Method: 5/202		Impinger	Final	Initial	Net
Unit: DRYR #1	Meter Yd: 1.0041	Static Pressure: 0.67	Initial Leak: 0.005 @ 12" Hg		#1			
Location: Heyburn, ID	Meter ΔH @: 2.0339	P_{bar}: 25.8	Final Leak: 0.002 @ 9" Hg		#2			
Date: 6-20-11	Probe #:	Assumed Moisture: 25%	Filter Appearance:		#3			
Technician: ZH, JN	Liner Material: Qtz	ΔH K-Factor: 1.13	Impinger Appearance:		#4			
Run #: 1	Pitot Tube C_p: 0.84	Start Time: 10:28	Silica Gel Spent (Y/N):		#5			
Page 1 of 1	Nozzle Diameter (in.): ~~0.5~~ 0.19 W	End Time: 14:35	Filter #:	CPM Filter#	#6			

27.484

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3)	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
1	10	3.5	1.0	1.13	120	32.45	76	72	225	254	72	66
2	20	4.0	1.0	1.13	119	38.535	77	72	237	242	72	53
3	30	4.0	0.95	1.07	123	44.54	80	74	238	235	72	55
4	40	4.5	1.1	1.23	119	50.9	83	76	242	246	72	55
5	50	4.5	1.0	1.13	121	57.020	85	77	241	247	74	57
6	60	4.0	0.88	0.99	120	62.705	86	79	249	249	75	58
7	70	4.0	0.84	0.95	117	68.240	86	80	233	248	76	57
8	80	4.0	0.80	0.90	120	73.635	89	84	233	251	78	61
9	90	4.0	0.95	1.07	117	79.5	90	81	228	244	77	62
10	100	4.5	1.0	1.13	118	85.59	86	81	227	245	78	63
11	110	4.5	1.0	1.13	122	91.75	86	82	232	243	78	63
12	120	4.5	1.1	1.23	116	98.247	86	81	228	227	78	62
1	130	4.5	1.2	1.36	123	104.595	84	81	232	238	82	59
2	140	4.5	1.0	1.13	122	110.68	87	82	231	248	79	59
3	150	4.5	1.1	1.23	121	116.9	88	82	241	238	77	62
4	160	4.5	1.0	1.13	120	123.06	88	82	237	255	78	64
5	170	4.5	1.0	1.13	120	129.22	89	82	235	250	77	66
6	180	4.5	1.0	1.13	120	135.42	89	83	239	235	78	62
7	190	4.5	1.0	1.23	120	141.735	89	82	242	241	78	61
8	200	4.0	1.0	1.17	120	147.8	89	84	235	247	79	61
9	210	4.0	0.9	1.03	121	153.7	89	84	229	246	78	63
10	220	4.5	0.9	1.03	121	159.54	90	85	225	246	79	64
11	230	4.5	0.9	1.03	121	165.5	91	86	229	250	79	65
12	240	4.0	0.82	0.98	118	171.192	93	87	241	248	79	67

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	21-Jun-11
Start Time:	8:31 AM	Emission Unit:	Dryer 1 Stack
Stop Time:	12:40 PM	Project No.:	B.A11190.00
Run	2		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				170.582	In	Out				
1	10.00	1.30	1.53	121	177.565	69	65	6.082	73.91	101.9	0.70
2	20.00	1.10	1.30	122	184.120	76	68	5.651	68.05	103.0	0.66
3	30.00	1.10	1.30	124	190.670	83	72	5.589	68.16	102.1	0.65
4	40.00	1.10	1.30	122	197.260	86	75	5.592	68.05	101.9	0.66
5	50.00	1.00	1.18	121	203.500	89	78	5.264	64.82	100.6	0.62
6	60.00	0.90	1.06	120	209.340	91	81	4.903	61.44	98.6	0.58
7	70.00	1.00	1.18	121	215.660	91	82	5.302	64.82	101.3	0.63
8	80.00	1.00	1.18	118	221.950	93	84	5.258	64.66	100.2	0.63
9	90.00	0.75	0.90	120	227.400	94	85	4.544	56.09	100.1	0.55
10	100.00	0.75	0.90	116	232.800	94	87	4.494	55.90	98.7	0.54
11	110.00	0.75	0.90	116	238.330	95	88	4.594	55.90	100.9	0.55
12	120.00	0.65	0.80	114	243.525	94	88	4.318	51.95	101.7	0.52
13	130.00	1.00	1.18	116	249.875	91	8	5.715	64.54	108.7	0.63
14	140.00	0.99	1.17	118	256.005	96	90	5.082	64.33	97.3	0.61
15	150.00	1.00	1.18	118	262.235	98	91	5.152	64.66	98.2	0.62
16	160.00	0.91	1.07	118	268.470	99	91	5.149	61.68	102.8	0.62
17	170.00	1.00	1.20	120	274.900	98	90	5.322	64.77	101.6	0.64
18	180.00	1.10	1.35	120	281.590	98	91	5.535	67.93	100.7	0.67
19	190.00	1.20	1.50	120	288.660	98	91	5.851	70.95	101.9	0.71
20	200.00	1.20	1.50	116	295.760	99	92	5.866	70.71	101.8	0.71
21	210.00	1.10	1.35	122	302.280	100	93	5.375	68.05	98.0	0.65
22	220.00	1.20	1.50	124	309.400	101	93	5.866	71.19	102.6	0.71
23	230.00	1.20	1.50	121	316.660	102	94	5.971	71.01	104.1	0.73
24	240.00	1.20	1.50	121	323.960	102	95	5.999	71.01	104.6	0.73
Max/Avg.	240.00	1.02	1.23	120	153.378	88		5.353	65.19	101.4	0.64

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	21-Jun-11
Start Time:	8:31 AM	Emission Unit:	Dryer 1 Stack
Stop Time:	12:40 PM	Project No.:	B.A11190.00
Run	2		

Sampling Time, min	240	Meter Calibration Factor, Y	1.0041	H_2O Collected, ml	403.5
Number of Sample Points	24	Nozzle Area, ft^2	0.00020	Net H_20 Collected, V_{lc}, ml	403.5
O_2, %	Ambient	Corrected DGM, $V_{m(std)}$, dscf	128.424	Water Vapor Volume, $V_{w(std)}$, scf	18.99
CO_2, %	Ambient	Average ΔP, "H_2O	1.02	Water Vapor, B_{ws}	0.1288
N_2 & CO, %	Ambient	Average ΔP Square Root	1.01	Moisture Factor, 1- B_{ws}	0.8712
Barometric Pressure	25.80	Average ΔH, "H_2O	1.23	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	0.67	Stack Temperature, T_s, °R	580	Wet Molecular Weight, M_s, lb/lb-mole	27.58
Stack Pressure, P_s, "Hg	25.85	Meter Temperature, T_m, °R	548		
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	65.18	% Isokinetic	101.4

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	971.4	610.6	360.8
H_2O	670.1	671.0	-0.9
Empty	781.8	768.1	13.7
Silica Gel	996.9	967.0	29.9
		Sub Total	403.5
		Sample Line Rinse	0.0
		Total	403.5

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	9.62
Stack Flow Rate, acf/min	37,628
Stack Flow Rate, acf/hr	2,257,700
Stack Flow Rate, scf/min	29,618
Stack Flow Rate, scf/hr	1,777,060
Stack Flow Rate, dscf/min	25,803
Stack Flow Rate, dscf/hr	1,548,151

85" dwn
90" Hg

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

Client: GEM STATE	Meter Box ID: 95	Stack Diameter (in.): 42"	Test Method: EPA 5/202	Impinger	Final	Initial	Net
Unit: DRYER #1 Stack	Meter Yd: 1.0041	Static Pressure:	Initial Leak: 0.004 @ 12" Hg	#1			
Location: Heyburn, ID	Meter ΔH@: 2.0339	P_{bar}: 25.85	Final Leak: 0.004 @ 7" Hg	#2			
Date: 6-21-11	Probe #:	Assumed Moisture: 13%	Filter Appearance:	#3			
Technician: ZH, JN	Liner Material: Qtz	ΔH K-Factor: 1.18	Impinger Appearance:	#4			
Run #: 2	Pitot Tube C_p: 0.84	Start Time: 8:31	Silica Gel Spent (Y/N):	#5			
Page 1 of 1	Nozzle Diameter (in.): 0.19	End Time: 12:40	Filter #: CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3)	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
—	—	—	—	— 1.53	—	170.582	—	—	—	—	—	—
1	10	4.0	1.3	~~1.82~~	121	177.565	69	65	237	241	69	58
2	20	3.5	1.1	1.3	122	184.12	76	68	232	247	69	52
3	30	3.5	1.1	1.3	124	190.67	83	72	236	242	70	54
4	40	3.5	1.1	1.3	122	197.26	80	75	231	246	70	54
5	50	3.5	1.0	1.18	121	203.5	89	78	237	249	72	55
6	60	3.0	0.9	1.06	120	209.34	91	81	237	244	71	56
7	70	3.5	1.0	1.18	121	215.66	91	82	240	249	71	61
8	80	3.5	1.0	1.18	118	221.95	93	84	245	246	72	57
9	90	3.0	0.75	0.9	120	227.4	94	85	238	250	74	56
10	100	3.0	0.75	0.9	116	232.8	94	87	242	249	76	57
11	110	3.0	0.75	0.9	116	238.33	95	88	245	246	77	59
12	120	2.5	0.65	0.8	114	243.525	94	88	242	250	77	59
1	130	3.0	1.0	1.18	116	249.875	91	88	239	244	83	62
2	140	3.0	0.99	1.17	118	256.005	96	90	249	241	76	58
3	150	3.0	1.0	1.18	118	262.235	98	91	250	251	78	55
4	160	3.0	0.91	1.07	118	268.42	99	91	245	249	78	55
5	170	3.0	1.0	1.2	120	274.9	98	90	252	236	78	56
6	180	3.5	1.1	1.35	120	281.59	98	91	248	241	78	57
7	190	3.5	1.2	1.5	120	288.66	98	91	242	236	79	59
8	200	3.5	1.2	1.5	116	295.76	99	92	241	244	79	60
9	210	3.5	1.1	1.35	122	302.28	100	93	240	242	80	58
10	220	4.0	1.2	1.5	124	309.4	101	93	235	229	79	57
11	230	4.0	1.2	1.5	121	316.66	102	94	237	228	80	59
12	240		1.2	1.5	121	323.96	102	95	240	232	80	58

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	21-Jun-11
Start Time:	1:36 PM	Emission Unit:	Dryer 1 Stack
Stop Time:	5:46 PM	Project No.:	B.A11190.00
Run	3		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				324.510	In	Out				
1	10.00	1.00	1.20	114	330.680	91	91	5.135	64.42	97.4	0.62
2	20.00	0.85	1.05	116	336.630	96	92	4.923	59.49	101.4	0.59
3	30.00	1.00	1.20	118	342.900	98	93	5.176	64.64	98.5	0.63
4	40.00	0.80	1.00	117	348.700	99	93	4.781	57.76	101.6	0.58
5	50.00	0.83	1.00	119	354.530	101	95	4.788	58.94	100.1	0.58
6	60.00	1.00	1.20	120	360.790	102	96	5.135	64.75	97.9	0.63
7	70.00	0.90	1.15	120	366.910	105	98	4.997	61.43	100.4	0.61
8	80.00	1.00	1.30	120	373.450	107	100	5.323	64.75	101.5	0.65
9	90.00	1.00	1.30	120	380.000	106	100	5.336	64.75	101.7	0.66
10	100.00	0.80	1.05	121	385.980	107	101	4.860	57.96	103.7	0.60
11	110.00	1.10	1.40	120	392.900	107	102	5.624	67.91	102.2	0.69
12	120.00	1.00	1.30	119	399.550	107	101	5.408	64.70	103.0	0.67
13	130.00	1.00	1.30	119	406.140	103	101	5.378	64.70	102.4	0.66
14	140.00	0.70	0.90	118	411.540	104	100	4.402	54.08	100.1	0.54
15	150.00	0.75	1.00	120	417.400	104	100	4.779	56.08	105.2	0.59
16	160.00	1.10	1.40	121	424.350	107	101	5.654	67.97	102.8	0.70
17	170.00	1.00	1.30	120	430.980	107	101	5.392	64.75	102.8	0.66
18	180.00	1.00	1.30	120	437.620	106	100	5.410	64.75	103.1	0.66
19	190.00	1.10	1.45	117	444.650	109	101	5.709	67.74	103.5	0.70
20	200.00	0.90	1.20	117	451.020	111	104	5.147	61.27	103.1	0.64
21	210.00	1.20	1.50	119	458.240	113	106	5.818	70.87	101.2	0.72
22	220.00	1.10	1.50	122	465.450	115	107	5.795	68.03	105.5	0.72
23	230.00	1.00	1.40	118	472.400	115	108	5.579	64.64	106.2	0.69
24	240.00	0.90	1.20	115	478.900	114	108	5.220	61.16	104.4	0.65
Max/Avg.	240.00	0.96	1.23	119	154.390	103		5.240	63.23	102.1	0.64

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	21-Jun-11
Start Time:	1:36 PM	Emission Unit:	Dryer 1 Stack
Stop Time:	5:46 PM	Project No.:	B.A11190.00
Run	3		

Sampling Time, min	240	Meter Calibration Factor, Y	1.0041	H_2O Collected, ml	390.5
Number of Sample Points	24	Nozzle Area, ft^2	0.00020	Net H_2O Collected, V_{lc}, ml	390.5
O_2, %	Ambient	Corrected DGM, $V_{m(std)}$, dscf	125.808	Water Vapor Volume, $V_{w(std)}$, scf	18.38
CO_2, %	Ambient	Average ΔP, "H_2O	0.96	Water Vapor, B_{ws}	0.1275
N_2 & CO, %	Ambient	Average ΔP Square Root	0.98	Moisture Factor, 1- B_{ws}	0.8725
Barometric Pressure	25.80	Average ΔH, "H_2O	1.23	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	0.67	Stack Temperature, T_s, °R	579	Wet Molecular Weight, M_s, lb/lb-mole	27.60
Stack Pressure, P_s, "Hg	25.85	Meter Temperature, T_m, °R	563		
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	63.23	% Isokinetic	102.1

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	950.2	617.4	332.8
H_2O	601.3	598.4	2.9
Empty	796.2	777.4	18.8
Silica Gel	1028.3	992.3	36.0
		Sub Total	390.5
		Sample Line Rinse	0.0
		Total	390.5

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	9.62
Stack Flow Rate, acf/min	36,500
Stack Flow Rate, acf/hr	2,190,009
Stack Flow Rate, scf/min	28,769
Stack Flow Rate, scf/hr	1,726,138
Stack Flow Rate, dscf/min	25,102
Stack Flow Rate, dscf/hr	1,506,134

APPLIED ENVIRONMENTAL CONSULTANTS a IBR company

Client: GEM STATE	Meter Box ID: 95	Stack Diameter (in.): 42"	Test Method: EPA 5/202	Impinger	Final	Initial	Net
Unit: DRYER #1 Stack	Meter Yd: 1.0041	Static Pressure:	Initial Leak: 0.004 @ 12.5" Hg	#1			
Location: Heyburn, ID	Meter ΔH @: 2.0339	P_{bar}: 25.85	Final Leak: 0.002 @ 7" Hg	#2			
Date: 6-21-11	Probe #:	Assumed Moisture:	Filter Appearance:	#3			
Technician: ZH, JW	Liner Material: QFZ	ΔH K-Factor: 1.2	Impinger Appearance:	#4			
Run #: 3	Pitot Tube C_p: 0.84	Start Time: 13:34	Silica Gel Spent (Y/N):	#5			
Page 1 of 1	Nozzle Diameter (in.): 0.19	End Time: 17:46	Filter #: CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3)	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
—	—	—	—	—	—	328.51	—	—	—	—	—	—
1	10	4.0	1.0	1.2	114	330.68	91	91	242	234	81	60
2	20	4.0	0.85	1.05	116	336.63	96	92	241	235	82	54
3	30	4.0	1.0	1.2	118	342.9	98	93	240	240	79	54
4	40	4.0	0.8	1.0	117	348.700	99	93	242	249	79	56
5	50	4.0	0.83	1.00	119	354.53	101	95	247	249	82	56
6	60	4.5	1.0	1.2	120	360.79	102	96	245	247	82	56
7	70	4.5	0.9	1.15	120	366.91	105	98	251	250	82	56
8	80	4.5	1.0	1.3	120	373.45	107	100	252	249	83	63
9	90	4.5	1.0	1.3	120	380.0	106	100	247	249	81	57
10	100	4.5	0.8	1.05	121	385.98	107	101	249	250	81	58
11	110	5.0	1.1	1.4	120	392.9	107	102	242	250	82	59
12	120	4.5	1.0	1.3	119	399.55	107	101	245	248	80	57
1	130	4.5	1.0	1.3	119	406.14	103	101	241	252	78	62
2	140	4.0	0.7	0.9	118	411.54	104	100	238	249	80	56
3	150	4.5	0.75	1.0	120	417.4	104	100	235	246	83	58
4	160	5.0	1.1	1.4	121	424.35	107	101	234	247	79	57
5	170	5.0	1.0	1.3	120	430.98	107	101	242	246	80	60
6	180	5.0	1.0	1.3	120	437.62	106	100	235	245	82	61
7	190	5.5	1.1	1.45	117	444.65	109	101	237	247	83	64
8	200	4.5	0.9	1.2	117	451.02	111	104	235	248	82	62
9	210	5.5	1.2	1.5	119	458.24	113	106	242	251	83	62
10	220	5.0	1.1	1.5	122	465.45	115	107	232	246	82	61
11	230	5.0	1.0	1.4	118	472.4	115	108	235	250	83	64
12	240	4.5	0.9	1.2	115	478.9	114	108	231	249	80	64

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

RECOVERY DATA

Client: Gem State	Test Method: EPA 5/202
Unit: Dryer #1 Stack	Date: 6- 11
Location: Heyburn, ID	Project Number:

	RUN 1			RUN 2			RUN 3		
Filter Number:									
Impinger Contents:	Final	Initial	Net	Final	Initial	Net	Final	Initial	Net
Empty	942.0	609.6		971.4	610.6		950.2	617.4	
Empty	668.5	669.8		670.1	671.0		601.3	598.4	
H_2O	768.1	753.1		781.8	768.1		796.2	777.4	
Silica Gel	970.8	932.2		996.9	967.0		1028.3	992.3	
Line Rinse, g									
Total Weight, g									

Comments

Snifter Stack

METHOD 2 - STACK GAS VELOCITY INITIAL TRAVERSE

Stack Shape: C=Circular, R=Rectangular	c
Stack Diameter, (in.)	18.00
Stack Cross-Sectional Area (ft^2)	1.77
Barometric Pressure ("Hg)	25.80
Pitot Tube Calibration Coefficient (Cp)	0.84
Stack Static Pressure	1

Traverse Point #	ΔP ("H_2O)	Stack Temp (°F)	√ΔP ("H_2O)	Cyclonic Flow Angle for ΔP=0	Cyclonic Flow Abs. Angle for ΔP=0
1	0.70	111	0.84	8	8
2	0.80	111	0.89	7	7
3	0.82	111	0.91	7	7
4	0.78	111	0.88	5	5
5	0.74	111	0.86	5	5
6	0.65	111	0.81	5	5
7	0.62	111	0.79	5	5
8	0.61	110	0.78	10	10
9	0.82	110	0.91	10	10
10	0.78	110	0.88	9	9
11	0.75	109	0.87	10	10
12	0.75	109	0.87	6	6
13	0.72	109	0.85	5	5
14	0.73	109	0.85	5	5
15	0.76	109	0.87	8	8
16	0.82	109	0.91	12	12
Averages	0.74	110	0.86	7.3	7.3

Net Volume of O_2 (%)	20.90
Net Volume of CO_2 (%)	0.50
Net Volume of N_2 and CO (%)	78.60
Dry Molecular Weight of Stack Gas Estimate (g/g-mol)	29.00
Percent Moisture in Stack Gas (Estimate) (% H_2O)	11.00%
(1-Bws)	0.8900
Wet stack gas molecular weight	27.79
Stack Temperature (°F)	110
Stack Temperature (°R)	570
Stack Static Pressure ("H_20)	1
Stack Gas Pressure ("Hg)	25.87
Avg. Delta P (ΔP)	0.74
Avg. of Sqrt of Delta P (ΔP)	0.86
Stack Gas Velocity (ft/s)	54.97
Stack Gas Volumetric Flow Rate (dscfm)	4,155

For Determination of Moisture by Wet Bulb/Dry Bulb

Dry Stack Temperature (°F)	110.1
Dry Stack Temperature (°C)	43.4
Wet Stack Temperature (°F)	X
Wet Stack Temperature (°C)	
Stack Saturated Vapor Pressure (in. Hg)	
Stack Vapor Pressure (in. Hg)	
Stack Gas Moisture Content (%)	

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

INITIAL VELOCITY DATA

Client: GEM STATE	Stack Diameter (in.): 18"	Meter Box ID:	Type of Stack (C/R):
Unit: Swift	Coupling Length (in.)	Meter Y_d:	Diameter Upstream (A):
Location:	Static Pressure: +	Meter ΔH @:	Diameter Downstream (B):
Date:	Pbar:	Pitot Tube C_p:	No. of Ports:
Technician:	Assumed Moisture:	Pitot Tube #:	Est. Dry Mol. Wt.:

Traverse Points			Port Selection															
			A				B				C				D			
#	W/O Coup	W Coup	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0	T_s (°F)	ΔP ("H_2O)	ΔP@0° ("H_2O)	Angle For ΔP =0
1			111	.7		8		.82		10		2.9						
2				.8		7		.78		9		2.5						
3				.82		7	109	.75		10		2.0						
4			111	.78		5		.75		6		2.2						
5				.74		5		.72		5		2.2						
6				.65		5		.73		5		0.8						
7				.62		5		.76		8								
8			110	.61		10		.82		12								

Stack Diagram	Port Location	Additional Information
		Wet Bulb Temp. (°F)
		Dry Bulb Temp. (°F)

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	10:31 AM	Emission Unit:	Dryer 1 Snifter Stack
Stop Time:	4:37 PM	Project No.:	B.A11190.00
Run	1		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
						In	Out				
Initial	0				163.328						
1	10.00	0.89	1.88	113	171.495	72	71	7.076	60.48	95.4	0.82
2	20.00	1.00	2.11	110	180.190	76	71	7.511	63.94	95.2	0.87
3	30.00	0.65	1.37	112	187.120	80	73	5.940	51.64	93.6	0.69
4	40.00	0.53	1.12	109	193.910	82	74	5.800	46.51	100.9	0.68
5	50.00	0.15	0.32	113	197.230	83	75	2.824	24.83	92.7	0.33
6	60.00	0.73	1.54	113	204.725	80	77	6.404	54.77	95.3	0.75
7	70.00	0.67	1.41	116	211.885	86	79	6.070	52.61	94.5	0.72
8	80.00	0.75	1.58	113	219.500	85	78	6.471	55.52	95.0	0.76
9	90.00	0.70	1.48	115	227.020	87	79	6.371	53.73	97.0	0.75
10	100.00	0.81	1.71	115	235.135	88	81	6.860	57.79	97.1	0.81
11	110.00	0.82	1.73	109	243.245	89	81	6.850	57.85	95.8	0.81
12	120.00	0.77	1.62	108	251.007	89	81	6.554	56.01	94.5	0.78
13	130.00	1.60	3.38	109	261.975	88	83	9.299	80.80	93.1	1.10
14	140.00	0.05	0.11	112	264.195	88	84	1.863	14.32	105.8	0.22
15	150.00	0.53	1.12	110	270.510	87	85	5.315	46.55	92.6	0.63
16	160.00	0.35	0.74	113	276.605	91	86	5.101	37.92	109.6	0.61
17	170.00	0.47	0.99	111	282.645	92	86	5.054	43.87	93.5	0.60
18	180.00	0.42	0.89	111	288.370	93	87	4.780	41.47	93.6	0.57
19	190.00	0.50	1.06	109	294.625	95	88	5.211	45.17	93.4	0.63
20	200.00	0.76	1.60	113	302.390	94	88	6.485	55.88	94.6	0.78
21	210.00	1.00	2.11	113	311.380	96	89	7.498	64.10	95.3	0.90
22	220.00	1.00	2.11	109	320.400	94	89	7.537	63.88	95.5	0.90
23	230.00	0.95	2.00	112	329.215	95	89	7.357	62.43	95.9	0.88
24	240.00	0.92	1.94	115	337.842	95	90	7.192	61.59	95.5	0.86
Max/Avg.	240.00	0.71	1.50	112	174.514	85		6.143	52.24	96.0	0.73

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	10:31 AM	Emission Unit:	Dryer 1 Snifter Stack
Stop Time:	4:37 PM	Project No.:	B.A11190.00
Run	1		

Sampling Time, min	240	Meter Calibration Factor, Y	1.0065	H_2O Collected, ml	386.5
Number of Sample Points	24	Nozzle Area, ft^2	0.00029	Net H_20 Collected, V_{lc}, ml	386.5
O_2, %	Ambient	Corrected DGM, $V_{m(std)}$, dscf	147.366	Water Vapor Volume, $V_{w(std)}$, scf	18.19
CO_2, %	Ambient	Average ΔP, "H_2O	0.71	Water Vapor, B_{ws}	0.1099
N_2 & CO, %	Ambient	Average ΔP Square Root	0.82	Moisture Factor, 1- B_{ws}	0.8901
Barometric Pressure	25.80	Average ΔH, "H_2O	1.50	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	1.00	Stack Temperature, T_s, °R	572	Wet Molecular Weight, M_s, lb/lb-mole	27.79
Stack Pressure, P_s, "Hg	25.87	Meter Temperature, T_m, °R	545		
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	52.24	% Isokinetic	95.6

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	711.7	412.0	299.7
H_2O	642.2	641.1	1.1
Empty	804.5	762.2	42.3
Silica Gel	965.6	922.2	43.4
		Sub Total	386.5
		Sample Line Rinse	
		Total	386.5

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	1.77
Stack Flow Rate, acf/min	5,539
Stack Flow Rate, acf/hr	332,326
Stack Flow Rate, scf/min	4,423
Stack Flow Rate, scf/hr	265,371
Stack Flow Rate, dscf/min	3,937
Stack Flow Rate, dscf/hr	236,216

[193.248
193.502]

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

Client: GemState Processing	Meter Box ID: 5	Stack Diameter (in.): 18"	Test Method: M5/202	Impinger	Final	Initial	Net
Unit: Dryer #1 Shifter	Meter Yd: 1.0065	Static Pressure: +1.0	Initial Leak: 0.009@ 11" Hg	#1			
Location: Heyburn, Idaho	Meter ΔH @: 1.8050	P_{bar}: 25.80	Final Leak: 0.015 @ 13" Hg	#2			
Date: 6.20.11	Probe #: 7-5-1-Q	Assumed Moisture: 25%	Filter Appearance:	#3			
Technician: ZH JW	Liner Material: QTZ	ΔH K-Factor: 2.11	Impinger Appearance:	#4			
Run #: 1	Pitot Tube C_p: 0.84	Start Time: 1031	Silica Gel Spent (Y/N):	#5			
Page 1 of 1	Nozzle Diameter (in.): 0.230	End Time: 1637	Filter #: CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3) 163.328	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
1A	10	5.5	0.89	1.88	113	171.445	72	71	251	254	71	54
2A	20	7.0	1.00	2.11	110	180.140	76	71	249	251	70	52
3A	30	5.0	0.65	1.37	112	187.120	80	73	250	249	69	55
4A	40	4.0	0.53	1.12	109	193.910	82	74	251	253	72	55
5A	50	1.0	0.15	0.32	113	197.220	83	75	250	250	73	56
6A	60	5.5	0.73	1.54	113	204.725	80	77	250	252	80	56
7A	70	5.0	0.67	1.41	116	211.885	86	79	249	252	70	56
8A	80	6.0	0.75	1.58	113	219.500	85	78	250	247	74	58
9A	90	6.0	0.70	1.48	115	227.020	87	79	251	250	76	63
10A	100	6.5	0.81	1.71	115	235.135	88	81	250	251	77	64
11A	110	6.5	0.82	1.73	109	243.245	89	81	250	249	71	59
12A	120	5.5	0.77	1.62	108	251.007	89	81	249	247	70	57
1B	130	12	1.6	3.38	109	261.975	88	83	254	249	82	67
2B	140	1.0	0.05	0.11	112	264.195	88	84	248	249	82	65
3B	150	5.0	0.53	1.12	110	270.510	87	85	258	243	82	65
4B	160	4.5	0.35	0.74	113	276.605	91	86	249	252	82	66
5B	170	4.5	0.47	0.99	111	282.645	92	86	251	252	87	66
6B	180	4.0	0.42	0.89	111	288.370	93	87	249	251	82	65
7B	190	4.0	0.50	1.06	109	294.625	95	88	249	252	80	65
8B	200	6.0	0.76	1.60	113	302.390	94	88	250	251	80	65
9B	210	7.5	1.00	2.11	113	311.380	96	89	249	249	81	62
10B	220	7.5	1.00	2.11	109	320.400	94	89	250	254	79	59
11B	230	7.0	0.95	2.00	112	329.215	96	89	253	252	79	63
12B	240	7.0	0.92	1.94	115	337.842	95	90	248	249	79	64

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	8:29 AM	Emission Unit:	Dryer 1 Snifter Stack
Stop Time:	12:40 PM	Project No.:	B.A11190.00
Run	2		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				220.374	In	Out				
1	10.00	0.83	1.92	111	228.645	68	67	7.222	58.02	98.4	0.83
2	20.00	0.71	1.64	116	236.665	72	68	6.964	53.90	103.1	0.80
3	30.00	0.79	1.82	114	245.045	76	70	7.239	56.76	101.4	0.84
4	40.00	0.65	1.50	114	252.665	78	72	6.552	51.48	101.2	0.76
5	50.00	0.69	1.59	110	260.525	81	74	6.729	52.86	100.5	0.79
6	60.00	0.72	1.66	109	268.535	82	76	6.840	53.95	99.9	0.80
7	70.00	0.78	1.80	109	276.925	84	78	7.140	56.15	100.2	0.84
8	80.00	0.63	1.46	101	284.545	85	79	6.467	50.11	100.3	0.76
9	90.00	0.57	1.32	111	291.775	86	80	6.122	48.09	100.7	0.72
10	100.00	0.53	1.22	111	298.760	87	82	5.897	46.37	100.6	0.70
11	110.00	0.84	1.94	113	307.420	88	83	7.312	58.48	99.2	0.87
12	120.00	0.88	2.03	112	316.337	86	83	7.545	59.80	99.9	0.89
13	130.00	0.52	1.20	109	323.150	85	83	5.756	45.85	98.9	0.68
14	140.00	0.71	1.64	109	331.195	86	83	6.800	53.57	100.0	0.80
15	150.00	0.64	1.48	110	338.910	88	84	6.500	50.91	100.8	0.77
16	160.00	0.70	1.62	107	346.890	89	84	6.720	53.10	99.4	0.80
17	170.00	0.78	1.80	105	355.310	89	85	7.087	55.95	99.1	0.84
18	180.00	0.72	1.66	107	363.395	88	85	6.809	53.85	99.3	0.81
19	190.00	0.92	2.13	110	372.540	89	86	7.698	61.04	99.5	0.91
20	200.00	0.48	1.11	101	379.310	90	86	5.677	43.74	100.8	0.68
21	210.00	0.61	1.41	103	386.695	90	86	6.198	49.39	97.8	0.74
22	220.00	0.74	1.71	108	394.905	91	87	6.884	54.64	99.1	0.82
23	230.00	0.79	1.82	109	403.410	92	87	7.127	56.51	99.4	0.85
24	240.00	0.70	1.62	109	411.409	91	88	6.699	53.19	99.2	0.80
Max/Avg.	240.00	0.71	1.63	109	191.035	83		6.749	53.24	99.9	0.80

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	8:29 AM	Emission Unit:	Dryer 1 Snifter Stack
Stop Time:	12:40 PM	Project No.:	B.A11190.00
Run	2		

Sampling Time, min	240	Meter Calibration Factor, Y	1.0065	H_2O Collected, ml	323.2
Number of Sample Points	24	Nozzle Area, ft^2	0.00029	Net H_20 Collected, V_{lc}, ml	323.2
O_2, %	Ambient	Corrected DGM, $V_{m(std)}$, dscf	161.947	Water Vapor Volume, $V_{w(std)}$, scf	15.21
CO_2, %	Ambient	Average ΔP, "H_2O	0.71	Water Vapor, B_{ws}	0.0859
N_2 & CO, %	Ambient	Average ΔP Square Root	0.84	Moisture Factor, 1- B_{ws}	0.9141
Barometric Pressure	25.80	Average ΔH, "H_2O	1.63	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	1.00	Stack Temperature, T_s, °R	569	Wet Molecular Weight, M_s, lb/lb-mole	28.06
Stack Pressure, P_s, "Hg	25.87	Meter Temperature, T_m, °R	543		
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	53.23	% Isokinetic	99.9

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	710.5	415.0	295.5
H_2O	669.7	644.4	25.3
Empty	760.3	804.5	-44.2
Silica Gel	1025.1	978.5	46.6
		Sub Total	323.2
		Sample Line Rinse	0.0
		Total	323.2

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	1.77
Stack Flow Rate, acf/min	5,644
Stack Flow Rate, acf/hr	338,655
Stack Flow Rate, scf/min	4,529
Stack Flow Rate, scf/hr	271,713
Stack Flow Rate, dscf/min	4,140
Stack Flow Rate, dscf/hr	248,385

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

Client: Gem State Process	Meter Box ID: 4	Stack Diameter (in.): 18"	Test Method: 5/202	Impinger	Final	Initial	Net
Unit: Sn.Fltr	Meter Yd: 0.9798	Static Pressure: +1.00	Initial Leak: 0.008@ 11"	#1			
Location: Heyburn, Idaho	Meter ΔH @: 1.7605	P_{bar}: 25.85	Final Leak: 0.012 @ 12"	#2			
Date: 6-21-11	Probe #:	Assumed Moisture: 11%	Filter Appearance:	#3			
Technician: ZH JN	Liner Material: QTB	ΔH K-Factor: 2.31	Impinger Appearance:	#4			
Run #: 2	Pitot Tube C_p: 0.84	Start Time: 0829	Silica Gel Spent (Y/N):	#5			
Page 1 of 1	Nozzle Diameter (in.): 0.230	End Time: ~~1270~~ 1240	Filter #: CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3)	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
—	—	—	—	—	—	220.370	—	—	—	—	—	—
1A	10	6.0	0.83	1.92	111	228.645	68	67	260	252	69	52
2A	20	6.0	0.71	1.64	116	236.665	72	68	266	248	70	52
3A	30	6.5	0.79	1.82	114	245.045	76	70	227	250	71	52
4A	40	5.0	0.65	1.50	114	252.665	78	72	234	253	72	55
5A	50	5.5	0.69	1.59	110	260.575	81	74	267	249	72	57
6A	60	6.0	0.72	1.66	109	268.535	82	76	254	249	73	55
7A	70	7.0	0.78	1.80	109	276.925	84	78	229	251	74	56
8A	80	5.0	0.63	1.46	101	284.545	85	79	233	251	73	56
9A	90	5.0	0.57	1.32	111	291.775	86	80	237	250	73	57
10A	100	4.5	0.53	1.22	111	298.760	87	82	270	249	73	56
11A	110	7.0	0.84	1.94	113	307.420	88	83	262	249	75	59
12A	120	7.0	0.88	2.03	112	316.337	86	83	269	250	75	58
1B	130	4.5	0.52	1.20	109	323.150	85	83	266	245	71	63
2B	140	6.0	0.71	1.64	109	331.195	86	83	247	251	72	58
3B	150	5.5	0.64	1.48	110	338.910	88	84	230	249	73	58
4B	160	6.0	0.70	1.62	107	346.890	89	84	252	248	75	58
5B	170	6.5	0.78	1.80	105	355.310	89	85	267	249	77	59
6B	180	6.0	0.72	1.66	107	363.395	88	85	247	250	77	61
7B	190	7.5	0.92	2.13	110	372.540	89	86	257	251	77	61
8B	200	4.0	0.48	1.11	101	379.310	90	86	267	250	79	62
9B	210	5.0	0.61	1.41	103	386.695	90	86	271	248	76	60
10B	220	6.0	0.74	1.71	108	394.905	91	87	252	251	76	58
11B	230	6.5	0.79	1.82	109	403.410	92	87	248	251	76	57
12B	240	6.0	0.70	1.62	109	411.409	91	88	257	249	~~77~~	59

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	1:35 PM	Emission Unit:	Dryer 1 Snifter Stack
Stop Time:	5:38 PM	Project No.:	B.A11190.00
Run	3		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				411.930	In	Out				
1	10.00	0.74	1.78	114	420.155	86	85	6.942	55.03	101.3	0.82
2	20.00	0.81	1.94	112	428.895	87	85	7.373	57.48	102.6	0.87
3	30.00	0.68	1.63	113	436.955	89	87	6.769	52.71	102.9	0.81
4	40.00	0.70	1.68	114	445.090	91	88	6.814	53.52	102.2	0.81
5	50.00	0.57	1.37	113	452.525	90	88	6.228	48.26	103.4	0.74
6	60.00	0.82	1.97	113	461.340	93	89	7.369	57.88	102.1	0.88
7	70.00	0.88	2.11	115	470.440	94	90	7.597	60.06	101.7	0.91
8	80.00	0.66	1.58	114	478.390	97	92	6.597	51.97	101.9	0.79
9	90.00	0.71	1.70	115	486.650	96	94	6.850	53.95	102.1	0.83
10	100.00	0.62	1.49	109	494.425	96	94	6.444	50.15	102.3	0.78
11	110.00	0.55	1.32	111	501.745	98	95	6.048	47.32	102.1	0.73
12	120.00	0.73	1.75	107	510.196	97	96	6.991	54.32	102.1	0.85
13	130.00	0.91	2.18	111	519.400	97	96	7.623	60.87	100.0	0.92
14	140.00	0.87	2.09	111	528.550	97	96	7.576	59.51	101.7	0.91
15	150.00	0.84	2.02	114	537.565	96	96	7.470	58.63	102.3	0.90
16	160.00	0.61	1.46	109	545.145	96	95	6.277	49.75	100.4	0.76
17	170.00	0.58	1.39	106	552.530	98	96	6.097	48.38	99.8	0.74
18	180.00	0.86	2.06	114	561.490	97	96	7.419	59.33	100.4	0.90
19	190.00	0.70	1.68	106	569.660	97	95	6.763	53.15	100.7	0.82
20	200.00	0.42	1.01	116	576.040	99	96	5.257	41.53	102.0	0.64
21	210.00	0.64	1.54	109	584.080	102	97	6.611	50.96	103.3	0.80
22	220.00	0.77	1.85	112	592.775	104	100	7.124	56.04	101.7	0.87
23	230.00	0.72	1.73	112	601.180	104	101	6.878	54.19	101.6	0.84
24	240.00	0.69	1.66	107	609.355	105	102	6.677	52.81	100.3	0.82
Max/Avg.	240.00	0.71	1.71	112	197.425	95		6.825	53.66	101.7	0.82

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State Processing	Test Date:	20-Jun-11
Start Time:	1:35 PM	Emission Unit:	Dryer 1 Snifter Stack
Stop Time:	5:38 PM	Project No.:	B.A11190.00
Run	3		

Sampling Time, min	240	Meter Calibration Factor, Y	1.0065	H_2O Collected, ml	365.5
Number of Sample Points	24	Nozzle Area, ft^2	0.00029	Net H_20 Collected, V_{lc}, ml	365.5
O_2, %	Ambient	Corrected DGM, $V_{m(std)}$, dscf	163.769	Water Vapor Volume, $V_{w(std)}$, scf	17.20
CO_2, %	Ambient	Average ΔP, "H_2O	0.71	Water Vapor, B_{ws}	0.0950
N_2 & CO, %	Ambient	Average ΔP Square Root	0.84	Moisture Factor, 1- B_{ws}	0.9050
Barometric Pressure	25.80	Average ΔH, "H_2O	1.71	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	1.00	Stack Temperature, T_s, °R	572	Wet Molecular Weight, M_s, lb/lb-mole	27.95
Stack Pressure, P_s, "Hg	25.87	Meter Temperature, T_m, °R	555		
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	53.66	% Isokinetic	101.7

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	762.7	489.8	272.9
H_2O	649.7	648.0	1.7
Empty	603.7	563.1	40.6
Silica Gel	951.0	900.7	50.3
		Sub Total	365.5
		Sample Line Rinse	0.0
		Total	365.5

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	1.77
Stack Flow Rate, acf/min	5,689
Stack Flow Rate, acf/hr	341,352
Stack Flow Rate, scf/min	4,545
Stack Flow Rate, scf/hr	272,698
Stack Flow Rate, dscf/min	4,113
Stack Flow Rate, dscf/hr	246,779

APPLIED ENVIRONMENTAL CONSULTANTS a BR company

Client: Gem State Processing	Meter Box ID: 4	Stack Diameter (in.): 18"	Test Method: 5/202	Impinger	Final	Initial	Net
Unit: Dryer 1 Sifter	Meter Yd: 0.9798	Static Pressure: +1.00	Initial Leak: 0.001@ 13" Hg	#1			
Location: Heyburn, Idaho	Meter ΔH @: 1.7605	P_{bar}: 25.85	Final Leak: 0.007@ 10" Hg	#2			
Date: 6-21-11	Probe #: 4-5-1-55	Assumed Moisture: 11%	Filter Appearance:	#3			
Technician: ZH JN	Liner Material: QTZ	ΔH K-Factor: 2.140	Impinger Appearance:	#4			
Run #: 3	Pitot Tube C_p: 0.84	Start Time: 1335	Silica Gel Spent (Y/N):	#5			
Page 1 of 1	Nozzle Diameter (in.): 0.230	End Time: 1738	Filter #: CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3) 411.430	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
1A	10	6.0	0.74	1.78	114	420.155	86	85	227	244	79	64
2A	20	7.0	0.81	1.94	112	428.895	87	85	271	250	79	60
3A	30	6.0	0.68	1.63	113	436.955	89	87	260	248	77	56
4A	40	6.0	0.70	1.68	114	445.040	91	88	259	250	77	54
5A	50	5.0	0.57	1.37	113	452.525	90	88	261	253	76	53
6A	60	7.5	0.82	1.97	113	461.340	93	89	260	248	77	54
7A	70	7.5	0.88	2.11	115	470.440	94	90	236	251	79	55
8A	80	5.5	0.66	1.58	114	478.390	97	92	239	249	79	56
9A	90	6.0	0.71	1.70	115	486.650	96	94	232	248	79	55
10A	100	5.0	0.62	1.49	109	494.425	96	94	247	249	81	56
11A	110	5.0	0.55	1.32	111	501.745	98	95	250	251	81	57
12A	120	6.0	0.73	1.75	107	510.196	97	96	237	253	82	57
1B	130	~~6.5~~ 7.5	0.91	2.18	111	519.400	97	96	240	247	84	64
2B	140	7.5	0.87	2.09	111	528.550	97	96	238	249	81	56
3B	150	7.0	0.84	2.02	114	537.565	96	96	266	251	80	54
4B	160	5.0	0.61	1.46	109	545.145	96	95	239	248	80	57
5B	170	5.0	0.58	1.39	106	552.530	98	96	255	253	80	57
6B	180	~~6.0~~ 7.0	0.86	2.06	114	561.490	97	96	243	249	81	56
7B	190	6.0	0.70	1.68	106	569.660	97	95	269	252	82	57
8B	200	4.0	0.42	1.01	116	576.040	99	96	253	250	82	58
9B	210	6.0	0.64	1.54	109	584.080	102	97	260	249	82	60
10B	220	6.5	0.77	1.85	112	592.775	104	100	270	250	83	63
11B	230	6.0	0.72	1.73	112	601.180	104	101	254	251	82	63
12B	240	5.5	0.69	1.66	107	609.355	105	102	234	250	83	64

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

RECOVERY DATA

Client: Gem State	Test Method: EPA 5/202
Unit: #1 Swift	Date:
Location: Heyburn, ID	Project Number:

	RUN 1			RUN 2			RUN 3		
Filter Number:									
Impinger Contents:	Final	Initial	Net	Final	Initial	Net	Final	Initial	Net
Empty	711.7	412.0		710.5	415.0		762.7	489.8	
Empty	642.2	641.1		669.7	644.4		649.7	648.0	
H_2O	804.5	762.2		760.3	804.5		603.7	563.1	
Silica Gel	965.6	922.2		1025.1	978.5		951.0	900.7	
Line Rinse, g									
Total Weight, g									

Comments

APPENDIX C

Laboratory Data

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

Laboratory Analysis Results

Client: Gem State Stack | Project: B.A11190.00

Method: EPA Method 5/202 | Report Date: 6/30/2011

Sample ID	Tin/Filter ID	Run #	Sample Description	Unit	Sample Type	Sample Date	Samples Received	Sample Volume (ml)	Final Gross Mass (g)	Final Tare Mass (g)	Net Mass (g)
11-0653	3616	1	Filter	Stack	Filter	6/20/2011	6/27/2011	#N/A	0.2720	0.2688	0.0032
11-0654	3614	2	Filter	Stack	Filter	6/21/2011	6/27/2011	#N/A	0.2605	0.2566	0.0039
11-0655	3612	3	Filter	Stack	Filter	6/21/2011	6/27/2011	#N/A	0.2818	0.2787	0.0031
11-0656	3610	Blank	Filter Blank	Blank	Filter	6/21/2011	6/27/2011	#N/A	0.2683	0.2683	0.0000
11-0657	R1-S	1	P/N Rinse	Stack	Acetone	6/20/2011	6/27/2011	80	2.2174	2.2022	0.0152
11-0658	R2-S	2	P/N Rinse	Stack	Acetone	6/21/2011	6/27/2011	60	2.2671	2.2505	0.0166
11-0659	R3-S	3	P/N Rinse	Stack	Acetone	6/21/2011	6/27/2011	75	2.2582	2.2453	0.0129
11-0660	Blank	Blank	P/N Rinse Blank	Blank	Acetone	6/21/2011	6/27/2011	50	2.2049	2.2048	0.0001
11-0661	R1-S-O/F	1	Organic Fraction	Stack	Hexane/Acetone	6/20/2011	6/27/2011	125	2.2943	2.2920	0.0023
11-0662	R2-S-O/F	2	Organic Fraction	Stack	Hexane/Acetone	6/21/2011	6/27/2011	110	2.2678	2.2643	0.0035
11-0663	R3-S-O/F	3	Organic Fraction	Stack	Hexane/Acetone	6/21/2011	6/27/2011	110	2.2011	2.1983	0.0028
11-0664	R1-S-I/F	1	Inorganic Fraction	Stack	H2O	6/20/2011	6/27/2011	670	2.2527	2.2496	0.0031
11-0665	R2-S-I/F	2	Inorganic Fraction	Stack	H2O	6/21/2011	6/27/2011	625	2.2598	2.2558	0.0040
11-0666	R3-S-I/F	3	Inorganic Fraction	Stack	H2O	6/21/2011	6/27/2011	640	2.2083	2.2052	0.0031
11-0667	FTB-S-O/F	Blank	Organic Fraction	Stack	Hexane/Acetone	6/20/2011	6/27/2011	80	2.2401	2.2397	0.0004
11-0668	FTB-S-I/F	Blank	Inorganic Fraction	Stack	H2O	6/20/2011	6/27/2011	180	2.2045	2.2040	0.0005
11-0681	Acetone Blank	Blank	Blank	Blank	Acetone	6/20/2011	6/27/2011	150	2.2207	2.2207	0.0000
11-0682	Hexane Blank	Blank	Blank	Blank	Hexane	6/20/2011	6/27/2011	150	2.2398	2.2398	0.0000
11-0683	DI H2O Blank	Blank	Blank	Blank	DI H2O	6/20/2011	6/28/2011	150	2.2285	2.2280	0.0005

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

Laboratory Analysis Results

Client: Gem State Snifter | Project: B.A11190.00

Method: EPA Method 5/202 | Report Date: 6/30/2011

Sample ID	Tin/Filter ID	Run #	Sample Description	Unit	Sample Type	Sample Date	Samples Received	Sample Volume (ml)	Final Gross Mass (g)	Final Tare Mass (g)	Net Mass (g)
11-0669	3615	1	Filter	Snifter	Filter	6/20/2011	6/27/2011	#N/A	0.2665	0.2660	0.0005
11-0670	3613	2	Filter	Snifter	Filter	6/21/2011	6/27/2011	#N/A	0.2845	0.2843	0.0002
11-0671	3611	3	Filter	Snifter	Filter	6/21/2011	6/27/2011	#N/A	0.2587	0.2583	0.0004
11-0656	3610	Blank	Filter Blank	Blank	Filter	6/21/2011	6/27/2011	#N/A	0.2683	0.2683	0.0000
11-0672	R1-ST	1	P/N Rinse	Snifter	Acetone	6/20/2011	6/27/2011	60	2.2476	2.2451	0.0025
11-0673	R2-ST	2	P/N Rinse	Snifter	Acetone	6/21/2011	6/27/2011	60	2.2442	2.2407	0.0035
11-0674	R3-ST	3	P/N Rinse	Snifter	Acetone	6/21/2011	6/27/2011	70	2.2190	2.2166	0.0024
11-0660	Blank	Blank	P/N Rinse Blank	Blank	Acetone	6/21/2011	6/27/2011	50	2.2049	2.2048	0.0001
11-0675	R1-ST-O/F	1	Organic Fraction	Snifter	Hexane/Acetone	6/20/2011	6/27/2011	125	2.1798	2.1782	0.0016
11-0676	R2-ST-O/F	2	Organic Fraction	Snifter	Hexane/Acetone	6/21/2011	6/27/2011	125	2.2053	2.2038	0.0015
11-0677	R3-ST-O/F	3	Organic Fraction	Snifter	Hexane/Acetone	6/21/2011	6/27/2011	125	2.2377	2.2359	0.0018
11-0678	R1-ST-I/F	1	Inorganic Fraction	Snifter	H2O	6/20/2011	6/27/2011	625	2.2404	2.2382	0.0022
11-0679	R2-ST-I/F	2	Inorganic Fraction	Snifter	H2O	6/21/2011	6/27/2011	525	2.2053	2.2031	0.0022
11-0680	R3-ST-I/F	3	Inorganic Fraction	Snifter	H2O	6/21/2011	6/27/2011	600	2.2378	2.2360	0.0018
11-0667	FTB-S-O/F	Blank	Organic Fraction	Stack	Hexane/Acetone	6/20/2011	6/27/2011	80	2.2401	2.2397	0.0004
11-0668	FTB-S-I/F	Blank	Inorganic Fraction	Stack	H2O	6/20/2011	6/27/2011	180	2.2045	2.2040	0.0005
11-0681	Acetone Blank	Blank	Blank	Blank	Acetone	6/20/2011	6/27/2011	150	2.2207	2.2207	0.0000
11-0682	Hexane Blank	Blank	Blank	Blank	Hexane	6/20/2011	6/27/2011	150	2.2398	2.2398	0.0000
11-0683	DI H2O Blank	Blank	Blank	Blank	DI H2O	6/20/2011	6/28/2011	150	2.2285	2.2280	0.0005

APPENDIX D

Process Data

Daily Moisture Output AnalysisJune 2011

	6/1/2011	6/2/2011	6/3/2011	6/4/2011	6/5/2011	6/6/2011	6/7/2011	6/8/2011	6/9/2011	6/10/2011	6/11/2011
Dayshift Moisture	6.85	7.05	7.26	7.7	7.84	7.65	7.7	7.64	7.73	7.95	7
Night Shift Moisture											
Total Moisture AVG	6.85	7.05	7.26	7.7	7.84	7.65	7.7	7.64	7.73	7.95	7

	6/13/2011	6/14/2011	6/15/2011	6/16/2011	6/17/2011	6/18/2011	6/19/2011	6/20/2011	6/21/2011	6/22/2011	6/23/2011
Dayshift Moisture	7.11	7.05	7.2	7.1	6.9			7.01	7.40		
Night Shift Moisture								7.10	7.04		
Total Moisture AVG	7.11	7.05	7.2	7.1	6.9	#DIV/0!	#DIV/0!	7.055	7.22	#DIV/0!	#DIV/0!

Date	Time	ID	Tag Name	LBS
6/21/2011	6:00:22	841	LOGS\WEIGHBELT1_FLOW_ACT	31,038
6/21/2011	6:15:23	860	LOGS\WEIGHBELT1_FLOW_ACT	34,680
6/21/2011	6:30:24	892	LOGS\WEIGHBELT1_FLOW_ACT	35,753
6/21/2011	6:45:25	910	LOGS\WEIGHBELT1_FLOW_ACT	32,707
6/21/2011	7:00:26	951	LOGS\WEIGHBELT1_FLOW_ACT	34,740
6/21/2011	7:15:27	967	LOGS\WEIGHBELT1_FLOW_ACT	31,119
6/21/2011	7:30:58	904	LOGS\WEIGHBELT1_FLOW_ACT	32,996
6/21/2011	7:45:29	879	LOGS\WEIGHBELT1_FLOW_ACT	32,372
6/21/2011	8:00:00	862	LOGS\WEIGHBELT1_FLOW_ACT	31,765
6/21/2011	8:15:01	874	LOGS\WEIGHBELT1_FLOW_ACT	32,212
6/21/2011	8:31:02	969	LOGS\WEIGHBELT1_FLOW_ACT	23,943
6/21/2011	8:45:03	936	LOGS\WEIGHBELT1_FLOW_ACT	33,533
6/21/2011	9:00:04	954	LOGS\WEIGHBELT1_FLOW_ACT	31,584
6/21/2011	9:15:05	983	LOGS\WEIGHBELT1_FLOW_ACT	32,227
6/21/2011	9:30:37	73	LOGS\WEIGHBELT1_FLOW_ACT	33,155
6/21/2011	9:45:37	921	LOGS\WEIGHBELT1_FLOW_ACT	30,000
6/21/2011	10:01:08	933	LOGS\WEIGHBELT1_FLOW_ACT	28,203
6/21/2011	10:15:09	904	LOGS\WEIGHBELT1_FLOW_ACT	30,095
6/21/2011	10:30:40	983	LOGS\WEIGHBELT1_FLOW_ACT	31,606
6/21/2011	10:45:11	971	LOGS\WEIGHBELT1_FLOW_ACT	29,459
6/21/2011	11:00:13	9	LOGS\WEIGHBELT1_FLOW_ACT	32,908
6/21/2011	11:15:44	85	LOGS\WEIGHBELT1_FLOW_ACT	32,859
6/21/2011	11:31:15	146	LOGS\WEIGHBELT1_FLOW_ACT	27,102
6/21/2011	11:45:46	150	LOGS\WEIGHBELT1_FLOW_ACT	35,442
6/21/2011	12:00:47	67	LOGS\WEIGHBELT1_FLOW_ACT	27,151
6/21/2011	12:15:48	68	LOGS\WEIGHBELT1_FLOW_ACT	32,918
6/21/2011	12:30:49	83	LOGS\WEIGHBELT1_FLOW_ACT	32,531
6/21/2011	12:45:20	74	LOGS\WEIGHBELT1_FLOW_ACT	33,293
6/21/2011	13:00:21	122	LOGS\WEIGHBELT1_FLOW_ACT	35,640
6/21/2011	13:15:22	161	LOGS\WEIGHBELT1_FLOW_ACT	31,503
6/21/2011	13:30:23	190	LOGS\WEIGHBELT1_FLOW_ACT	31,397
6/21/2011	13:44:54	199	LOGS\WEIGHBELT1_FLOW_ACT	30,642
6/21/2011	14:00:25	254	LOGS\WEIGHBELT1_FLOW_ACT	33,046
6/21/2011	14:15:56	226	LOGS\WEIGHBELT1_FLOW_ACT	28,842
6/21/2011	14:30:27	163	LOGS\WEIGHBELT1_FLOW_ACT	29,374
6/21/2011	14:45:28	194	LOGS\WEIGHBELT1_FLOW_ACT	31,631
6/21/2011	15:00:29	231	LOGS\WEIGHBELT1_FLOW_ACT	31,980
6/21/2011	15:15:00	223	LOGS\WEIGHBELT1_FLOW_ACT	32,414
6/21/2011	15:30:01	246	LOGS\WEIGHBELT1_FLOW_ACT	28,390
6/21/2011	15:45:02	273	LOGS\WEIGHBELT1_FLOW_ACT	33,017
6/21/2011	16:00:03	295	LOGS\WEIGHBELT1_FLOW_ACT	36,688
6/21/2011	16:15:34	362	LOGS\WEIGHBELT1_FLOW_ACT	30,039
6/21/2011	16:30:35	392	LOGS\WEIGHBELT1_FLOW_ACT	30,409
6/21/2011	16:45:36	413	LOGS\WEIGHBELT1_FLOW_ACT	34,507
6/21/2011	17:00:07	386	LOGS\WEIGHBELT1_FLOW_ACT	30,233
6/21/2011	17:15:08	412	LOGS\WEIGHBELT1_FLOW_ACT	30,815
6/21/2011	17:30:09	423	LOGS\WEIGHBELT1_FLOW_ACT	33,660
6/21/2011	17:45:10	441	LOGS\WEIGHBELT1_FLOW_ACT	33,222
6/21/2011	17:59:41	438	LOGS\WEIGHBELT1_FLOW_ACT	31,532

31762.69 daily average
33200 set point

Date	Time	ID	Tag Name	LBS
6/20/2011	6:00:29	365	LOGS\WEIGHBELT1_FLOW_ACT	30,409
6/20/2011	6:15:30	397	LOGS\WEIGHBELT1_FLOW_ACT	31,969
6/20/2011	6:30:01	392	LOGS\WEIGHBELT1_FLOW_ACT	33,131
6/20/2011	6:45:32	472	LOGS\WEIGHBELT1_FLOW_ACT	28,831
6/20/2011	7:00:03	468	LOGS\WEIGHBELT1_FLOW_ACT	29,191
6/20/2011	7:15:34	531	LOGS\WEIGHBELT1_FLOW_ACT	30,688
6/20/2011	7:30:35	562	LOGS\WEIGHBELT1_FLOW_ACT	25,754
6/20/2011	7:45:06	576	LOGS\WEIGHBELT1_FLOW_ACT	31,818
6/20/2011	8:00:07	604	LOGS\WEIGHBELT1_FLOW_ACT	31,835
6/20/2011	8:15:38	660	LOGS\WEIGHBELT1_FLOW_ACT	29,693
6/20/2011	8:30:39	393	LOGS\WEIGHBELT1_FLOW_ACT	30,808
6/20/2011	8:45:10	330	LOGS\WEIGHBELT1_FLOW_ACT	19,774
6/20/2011	9:00:41	384	LOGS\WEIGHBELT1_FLOW_ACT	33,582
6/20/2011	9:15:12	382	LOGS\WEIGHBELT1_FLOW_ACT	22,189
6/20/2011	9:30:13	402	LOGS\WEIGHBELT1_FLOW_ACT	23,325
6/20/2011	9:45:14	421	LOGS\WEIGHBELT1_FLOW_ACT	18,973
6/20/2011	10:00:15	438	LOGS\WEIGHBELT1_FLOW_ACT	26,911
6/20/2011	10:15:16	459	LOGS\WEIGHBELT1_FLOW_ACT	32,520
6/20/2011	10:30:17	486	LOGS\WEIGHBELT1_FLOW_ACT	34,483
6/20/2011	10:45:18	497	LOGS\WEIGHBELT1_FLOW_ACT	33,734
6/20/2011	11:00:19	510	LOGS\WEIGHBELT1_FLOW_ACT	24,914
6/20/2011	11:15:20	543	LOGS\WEIGHBELT1_FLOW_ACT	27,176
6/20/2011	11:30:21	574	LOGS\WEIGHBELT1_FLOW_ACT	28,676
6/20/2011	11:45:22	598	LOGS\WEIGHBELT1_FLOW_ACT	35,103
6/20/2011	12:00:23	629	LOGS\WEIGHBELT1_FLOW_ACT	30,815
6/20/2011	12:15:24	654	LOGS\WEIGHBELT1_FLOW_ACT	30,342
6/20/2011	12:30:25	692	LOGS\WEIGHBELT1_FLOW_ACT	32,474
6/20/2011	12:45:26	724	LOGS\WEIGHBELT1_FLOW_ACT	31,436
6/20/2011	13:00:27	501	LOGS\WEIGHBELT1_FLOW_ACT	27,518
6/20/2011	13:15:28	408	LOGS\WEIGHBELT1_FLOW_ACT	30,819
6/20/2011	13:30:29	437	LOGS\WEIGHBELT1_FLOW_ACT	31,800
6/20/2011	13:45:00	431	LOGS\WEIGHBELT1_FLOW_ACT	32,894
6/20/2011	14:00:01	474	LOGS\WEIGHBELT1_FLOW_ACT	28,938
6/20/2011	14:15:02	508	LOGS\WEIGHBELT1_FLOW_ACT	33,533
6/20/2011	14:30:03	542	LOGS\WEIGHBELT1_FLOW_ACT	32,121
6/20/2011	14:45:04	566	LOGS\WEIGHBELT1_FLOW_ACT	30,723
6/20/2011	15:00:05	618	LOGS\WEIGHBELT1_FLOW_ACT	31,528
6/20/2011	15:15:06	649	LOGS\WEIGHBELT1_FLOW_ACT	33,201
6/20/2011	15:30:07	677	LOGS\WEIGHBELT1_FLOW_ACT	25,206
6/20/2011	15:45:08	701	LOGS\WEIGHBELT1_FLOW_ACT	32,322
6/20/2011	16:00:09	734	LOGS\WEIGHBELT1_FLOW_ACT	32,573
6/20/2011	16:15:10	757	LOGS\WEIGHBELT1_FLOW_ACT	30,187
6/20/2011	16:30:11	794	LOGS\WEIGHBELT1_FLOW_ACT	30,734
6/20/2011	16:45:12	831	LOGS\WEIGHBELT1_FLOW_ACT	32,237
6/20/2011	17:00:13	851	LOGS\WEIGHBELT1_FLOW_ACT	31,066
6/20/2011	17:15:14	888	LOGS\WEIGHBELT1_FLOW_ACT	33,374
6/20/2011	17:30:15	735	LOGS\WEIGHBELT1_FLOW_ACT	32,410
6/20/2011	17:59:47	561	LOGS\WEIGHBELT1_FLOW_ACT	31,878

30117.02 daily average
33200 set point

APPENDIX E

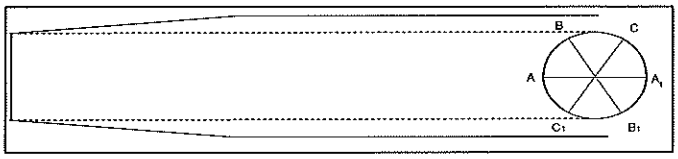
Quality Assurance and Calibration Data

ISOKINETIC SAMPLING - NOZZLE SELECTION

Time	DGM	Delta P (ΔP)	Orifice Delta H			DGM Temp (°F)		
			Actual	Desired	Tstack (°F)	In	Out	% ISO
1.00	0.82	0.74	1.83	1.76	110	85.0	80.0	102.55

Estimation of Ideal Nozzle Diameter (in")	0.229	Run Time (min)	240.00
Diameter of Nozzle (in")	0.230	Traverse Points	24.00
Diameter of Nozzle (ft^2)	0.00029	Min / Point	10.00
ΔH K Factor	**2.368**	Total Volume (dcf)	196.800
		Est. Corrected Volume (dscf)	167.040

Barometric Pressure ("Hg)	25.80	Ave Ts (°R)	570.1
Stack Static Pressure	1.00	Bws (est.)	0.1100
Pitot Tube Calibration Coefficient (Cp)	0.84	1-Bws	0.8900
Percent Moisture in Stack Gas Estimate (% H_2O)	11.00%	Mol. Wt. of Stack Gas Wet	27.79
Average Stack Temperature (°F)	110.1	Mol Wt. of Stack Gas Dry	29.00
Ave. Delta P (ΔP)	0.74	Total Volume DCF	0.820
Net Time of Test (min)	1	Total Volume DSCF	0.696
Meter Box No.	5	Ave. Delta P (ΔP) ("H_2O)	0.74
Ym Meter Corr. Factor	1.0065	Average Delta H@ ("H_2O)	1.83
Meter Delta H@ ("H_2O)	1.8050	Ave. Sqrt ΔP	0.86
Np # of Points	1	Ave. Tm (°F)	82.50
%CO_2 by Orsat or Cont. Analyzer	0.50	Stack Gas Pressure ("Hg)	25.87
%O_2 by Orsat or Cont. Analyzer	20.90	Stack Gas Velocity (ft/sec)	55.03
%N_2	78.60	Percent Isokinetic (%I)	102.55



Nozzle Identification No.:	0.230
Calibration Date:	06/30/09
Technician:	JN
Nozzle Type:	Teflon-lined Stainless

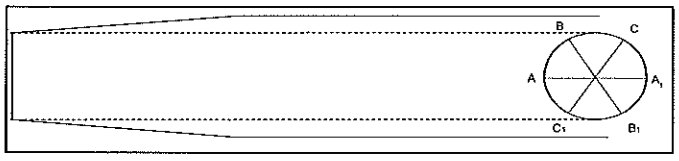
Diameter	Measurement	
A - A1	0.325	
B - B1	0.325	
C - C1	0.324	
Maximum Difference	0.001	(< 0.004 in.)
Average Diameter	**0.325**	

ISOKINETIC SAMPLING - NOZZLE SELECTION

Time	DGM	Delta P (ΔP)	Orifice Delta H			DGM Temp (°F)		
			Actual	Desired	Tstack (°F)	In	Out	% ISO
1.00	0.60	0.89	1.10	1.06	121	85.0	80.0	102.48

Estimation of Ideal Nozzle Diameter (in")	0.215	Run Time (min)	240.00
Diameter of Nozzle (in")	0.190	Traverse Points	24.00
Diameter of Nozzle (ft^2)	0.00020	Min / Point	10.00
ΔH K Factor	**1.177**	Total Volume (dcf)	144.000
		Est. Corrected Volume (dscf)	121.680

Barometric Pressure ("Hg)	25.80	Ave Ts (°R)	580.6
Stack Static Pressure	0.67	Bws (est.)	0.1300
Pitot Tube Calibration Coefficient (Cp)	0.84	1-Bws	0.8700
Percent Moisture in Stack Gas Estimate (% H_2O)	13.00%	Mol. Wt. of Stack Gas Wet	27.57
Average Stack Temperature (°F)	120.6	Mol Wt. of Stack Gas Dry	29.00
Ave. Delta P (ΔP)	0.89	Total Volume DCF	0.600
Net Time of Test (min)	1	Total Volume DSCF	0.507
Meter Box No.	9S	Ave. Delta P (ΔP) ("H_2O)	0.89
Ym Meter Corr. Factor	1.0041	Average Delta H@ ("H_2O)	1.10
Meter Delta H@ ("H_2O)	2.0339	Ave. Sqrt ΔP	0.95
Np # of Points	1	Ave. Tm (°F)	82.50
%CO_2 by Orsat or Cont. Analyzer	0.50	Stack Gas Pressure ("Hg)	25.85
%O_2 by Orsat or Cont. Analyzer	20.90	Stack Gas Velocity (ft/sec)	61.30
%N_2	78.60	Percent Isokinetic (%I)	102.48



Nozzle Identification No.:	0.190
Calibration Date:	06/30/09
Technician:	JN
Nozzle Type:	Teflon-lined Stainless

Diameter	Measurement	
A - A1	0.190	
B - B1	0.189	
C - C1	0.191	
Maximum Difference	0.002	(< 0.004 in.)
Average Diameter	**0.190**	

EPA APPROVED ALTERNATIVE METHOD ALT-009

Client:	Gem State Processing
Test Date:	20-Jun-11
Emissions Unit:	Dryer 1 Snifter Stack
Project No.:	B.A11190.00
Meter Box No.:	5

Run Data

	Run1	Run 2	Run 3	Averages
Test Date	20-Jun-11	20-Jun-11	20-Jun-11	
Start Time	10:31 AM	8:29 AM	1:35 PM	
Stop Time	4:37 PM	12:40 PM	5:38 PM	
Sampling Time, min	240	240	240	
Orifice ΔP, ΔH@, "H_2O	1.8050	1.8050	1.8050	1.8050
Barometric Pressure, P_{bar}, "Hg	25.80	25.80	25.80	25.80
DGM Total, Vm, dcf	174.514	191.035	197.425	187.658
Meter Temperature, T_m, °R	545	543	555	548
Average ΔH, "H_2O	1.50	1.63	1.71	1.61
Average √ΔH, "H_2O	1.19	1.27	1.30	1.25
Dry Molecular Weight, M_d, lb/lb-mole	29.00	29.00	29.00	29.00
Dry Ambient Air Molecular Weight, (lb/lb-mole)	29	29	29	29
Mercury Specific Gravity	13.6	13.6	13.6	13.6
Constant ("Hg/°R) $(cfm)^2$	0.0319	0.0319	0.0319	0.0319

Alternative Method 5 Post-Test Calibration Results

Post Dry Gas Meter Calibration Factor (Y_{qa})	0.9937	0.9725	0.9736	0.9799
Dry Gas Meter Calibration Factor	1.0065	1.0065	1.0065	1.0065
Percent Difference				2.64
Pass/Fail Post Calibration				PASS

Calculations

$$Y_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319 * T_m * 29}{\Delta H @ * \left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right) * M_d}} * \left(\sqrt{\Delta H}\right)_{avg}$$

Y_{qa}	=	Dry gas meter calibration check valve, (dimensionless)
θ	=	Sampling Time, min
V_m	=	DGM Total, Vm, dcf
T_m	=	Meter Temperature, T_m, °R
P_{bar}	=	Barometric Pressure, P_{bar}, "Hg
0.0319	=	$(20.92/528)(0.75)^2$ ("Hg/°R)$(cfm)^2$
ΔH_{avg}	=	Average ΔH, "H_2O
ΔH@	=	Orifice ΔP, ΔH@, "H_2O
M_d	=	Dry Molecular Weight, M_d, Lb/lb-mole
29	=	Dry Ambient Air Molecular Weight, (lb/lb-mole)
13.6	=	Mercury Specific Gravity

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

SEMIANNUAL METER BOX FULL TEST CALIBRATION
(ENGLISH UNITS)

Date: 6/27/11 Barometric Pressure (Pb): 28.9 Calibrated By: GDB

Flow Rate	Orifice Manometer Setting In H_2O	Standard Meter Gas Volume			Standard Meter Temperature			Meter Box Gas Volume (ft3)			Meter Box Temperature					
Q	**(ΔH)**	Initial	Final	**Vds**	Initial	Final	**Tds**	Initial	Final	**Vd**	Inlet	**To**	**Td**	Time	***Yd***	***H@***
0.945	3.00	994.105	1004.200	10.095	80	80	80	783.800	793.802	10.002	83	80	81.5	0:10:05	1.004	1.7927
0.943	3.00	1004.200	1014.286	10.086	80	80	80	793.802	803.802	10.000	88	81	84.5	0:10:06	1.009	1.7919
0.376	0.50	1014.786	1019.780	4.994	80	80	80	804.300	809.300	5.000	86	81	83.5	0:12:32	1.004	1.8674
0.376	0.50	1019.780	1024.769	4.989	80	80.00	80	809.300	814.300	5.000	86	83	84.5	0:12:32	1.005	1.8677
0.671	1.50	1025.056	1035.054	9.998	80.0	80	80	814.600	824.600	10.000	88	84	86.0	0:14:04	1.007	1.7571
0.670	1.50	1035.054	1045.029	9.975	80.0	80	80	824.600	834.600	10.000	92	85	88.5	0:14:03	1.009	1.7530
														Average	**1.0065**	**1.8050**

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

PYROMETER CALIBRATION TEST REPORT

(ENGLISH UNITS)

Pyrometer #:	Reference Used:	Altek Model 222A
Calibrated By:	Serial #:	
Date:	Calibrated By:	Davis Instruments

Calibration Reference Setting for Fahrenheit Scale	Pyrometer Reading							
	Stack	Probe	Filter	Exit	Meter In	Meter Out	Aux I	Aux II
50	50	49	50	51	51	51	51	50
100	100	99	100	101	101	101	101	100
150	150	150	151	151	151	151	151	150
200	200	200	201	201	201	201	201	200
250	250	250	251	251	251	251	251	250
300	300	300	300	301	301	301	301	300
350	350	350	351	351	351	351	351	350
400	400	400	401	401	401	401	401	400
450	450	449	450	451	451	451	451	450
500	500	499	500	501	501	501	501	500
550	550	549	550	551	551	551	551	550
600	600	601	601	601	601	601	601	600

EPA APPROVED ALTERNATIVE METHOD ALT-009

Client:	Gem State Processing
Test Date:	6/20-21/2011
Emissions Unit:	Dryer 1 Stack
Project No.:	B.A11190.00
Meter Box No.:	9S

Run Data

	Run1	Run 2	Run 3	Averages
Test Date	20-Jun-11	21-Jun-11	21-Jun-11	
Start Time	10:28 AM	8:31 AM	1:36 PM	
Stop Time	2:35 PM	12:40 PM	5:46 PM	
Sampling Time, min	240	240	240	
Orifice ΔP, ΔH@, "H_2O	2.0339	2.0339	2.0339	2.0339
Barometric Pressure, P_{bar}, "Hg	25.80	25.80	25.80	25.80
DGM Total, Vm, dcf	143.708	153.378	154.390	150.492
Meter Temperature, T_m, °R	544	548	563	551
Average ΔH, "H_2O	1.11	1.23	1.23	1.19
Average √ΔH, "H_2O	1.05	1.10	1.11	1.09
Dry Molecular Weight, M_d, lb/lb-mole	29.00	29.00	29.00	29.00
Dry Ambient Air Molecular Weight, (lb/lb-mole)	29	29	29	29
Mercury Specific Gravity	13.6	13.6	13.6	13.6
Constant ("Hg/°R) $(cfm)^2$	0.0319	0.0319	0.0319	0.0319

Alternative Method 5 Post-Test Calibration Results

Post Dry Gas Meter Calibration Factor (Y_{qa})	1.0086	0.9959	1.0057	1.0034
Dry Gas Meter Calibration Factor	1.0041	1.0041	1.0041	1.0041
Percent Difference				0.07
Pass/Fail Post Calibration				PASS

Calculations

$$Y_{qa} = \frac{\theta}{V_m} \sqrt{\frac{0.0319 * T_m * 29}{\Delta H @ * \left(P_{bar} + \frac{\Delta H_{avg}}{13.6} \right) * Md}} * \left(\sqrt{\Delta H} \right)_{avg}$$

Y_{qa}	=	Dry gas meter calibration check valve, (dimensionless)
θ	=	Sampling Time, min
V_m	=	DGM Total, Vm, dcf
T_m	=	Meter Temperature, T_m, °R
P_{bar}	=	Barometric Pressure, P_{bar}, "Hg
0.0319	=	$(20.92/528)(0.75)^2$ ("Hg/°R)$(cfm)^2$
ΔH_{avg}	=	Average ΔH, "H_2O
ΔH@	=	Orifice ΔP, ΔH@, "H_2O
M_d	=	Dry Molecular Weight, M_d, Lb/lb-mole
29	=	Dry Ambient Air Molecular Weight, (lb/lb-mole)
13.6	=	Mercury Specific Gravity

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

SEMIANNUAL METER BOX FULL TEST CALIBRATION
(ENGLISH UNITS)

9S Date: 1/25/11 Barometric Pressure (Pb): 28.54 Calibrated By: ZH

Flow Rate	Orifice Manometer Setting	Standard Meter Gas Volume			Standard Meter Temperature			Meter Box Gas Volume (ft3)			Meter Box Temperature					
Q	(ΔH)	Initial	Final	Vds	Initial	Final	Tds	Initial	Final	Vd	Inlet	To	Td	Time	*Yd*	*H@*
0.912	3.00	697.500	707.497	9.997	66.0	67.0	66.5	674.663	684.599	9.936	67.5	65.0	66.3	0:10:29	0.9979	1.9470
0.901	3.00	707.497	717.499	10.002	67.0	67.0	67.0	684.599	694.544	9.945	73.5	66.5	70.0	0:10:36	1.0037	1.9866
0.356	0.50	717.499	722.497	4.998	65.7	66.4	66.1	694.544	699.553	5.009	72.5	69.0	70.8	0:13:26	1.0054	2.1119
0.354	0.50	722.497	728.497	6.000	66.4	66.9	66.7	699.553	705.583	6.030	73.5	70.0	71.8	0:16:11	1.0034	2.1277
0.628	1.50	728.497	738.496	9.999	66.9	67.4	67.2	705.583	715.642	10.059	79.0	72.0	75.5	0:15:12	1.0059	2.0238
0.628	1.50	738.496	748.494	9.998	67.3	67.8	67.6	715.642	725.713	10.071	82.5	73.5	78.0	0:15:11	1.0085	2.0171
														Average	**1.0041**	**2.0357**

Nomenclature

Pb	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. Hg)
Vd	Gas Meter Volume - Dry (ft3)
Vds	Standard Meter Volume - Dry (ft3)
Td	Average Meter Box Temperature
Tds	Average Standard Meter Box Temperature
To	Outlet Meter box Temperature

Equations

$$Y_d = \frac{V_{ds}\, P_b\, (T_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6} \right) (T_{ds} + 460)}$$

$$\Delta H @ = \frac{0.0319\, \Delta H}{P_b\, (T_o + 460)} \left(\frac{(T_{ds} + 460)\Theta}{V_{ds}} \right)^2$$

$$Q = \frac{17.64\, (V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

PYROMETER CALIBRATION TEST REPORT

(ENGLISH UNITS)

Pyrometer #:	9S	Reference Used:	Altek Model 222A
Calibrated By:	DEV	Serial #:	9925002
Date:	8/13/2009	Calibrated By:	Davis Instruments

Calibration Reference Setting for Fahrenheit Scale	Pyrometer Reading							
	Stack	Probe	Filter	Exit	Meter In	Meter Out	Aux I	Aux II
50	50	49	50	51	51	51	51	50
100	100	99	100	101	101	101	101	100
150	150	150	151	151	151	151	151	150
200	200	200	201	201	201	201	201	200
250	250	250	251	251	251	251	251	250
300	300	300	300	301	301	301	301	300
350	350	350	351	351	351	351	351	350
400	400	400	401	401	401	401	401	400
450	450	449	450	451	451	451	451	450
500	500	499	500	501	501	501	501	500
550	550	549	550	551	551	551	551	550
600	600	601	601	601	601	601	601	600

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International Accreditation Service, Inc.
Calibration Laboratory # CL-104
9830 S. 51st Street, Suite B-103 • Phoenix, Arizona 85044
(480) 598-0321 • FAX (480) 598-0768
E-mail: info@apscales.com
Website: apscales.com

TEMP 76 F° R.H. 40 %
AZ RSR License #00 1050
AZ RSA License #014790
P.O. # _____
Equipment # N/A

160g x 0.0001g
Capacity/Resolution

± 0.0005g
Tolerance Value

Comments:

NIST TRACEABILITY	
Control No.	Expires
100201001	2-11

Client # 955
Customer Name: Applied Environmental Consult.
Bldg. Main
Room LAB
Date 9-3-10
Recall Date 9-2011
Mfgr. Mettler
Model AE 100
Serial No. D40659

Calibration Instructions: Internal Cal. ☒ External Cal. ☐ Standard Cal. Procedure ☒ Handbook 44 ☐

List Weights Used	0.500 g	1 g	80 g	160 g
1. Prior to Service	0.5000 g	1.0000 g	80.0013 g	160.0029 g
Tolerance Error	0	0	+0.0013 g	+0.0029 g
2. After Service	0.5000 g	1.0000 g	80.0000 g	160.0000 g
Corner Load	Prior to Service	Weight Used	2 0.0000 g	3 0.0000 g
			1 0.0000 g	4 N/A
Corner Load	After Service	50 g	2 0.0000 g	3 0.0000 g
			1 0.0000 g	4 N/A

CORNER-LOAD ☑ LINEARITY ☑ REPRODUCIBILITY ☑

1. Prior to Service: ☐ This instrument was within tolerance and customer specifications
☒ This instrument was NOT within tolerance and customer specifications

2. After Service: ☒ This instrument IS WITHIN TOLERANCE and customer specifications
☐ This instrument is OUT OF TOLERANCE: DO NOT USE THIS INSTRUMENT. Significant out of tolerance may affect end product.

Reported Uncertainty: N/A
Method used for determining uncertainties is either the Root Sum Square Statistical Method, Total Collective Added Uncertainty, or an Expanded Uncertainty with a *coverage factor K=2*. Provided level of confidence: 95%. Uncertainty calculations available upon request.

TC
Customer

Technical Representative

Original: Customer
Copy: Vendor

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Calibration Laboratory # CL-104
9830 S. 51st Street, Suite B-103 • Phoenix, Arizona 85044
(480) 598-0321 • FAX (480) 598-0768
E-mail: info@apscales.com
Website: apscales.com

TEMP 76 F° R.H. 40 %
AZ RSR License #00 1056
AZ RSA License #014790
P.O. # _____
Equipment # AEC - 42

5g x 0.005mg (PolyR.)
Capacity/Resolution

± 0.025mg
Tolerance Value

Comments:
2g max capacity w/ Filter pan
EXTERNAL CAL- ONLY !!

NIST TRACEABILITY

Control No.	Expires
160201001	2-11

Client # 955				
Customer Name: Applied Environmental Consult.		Bldg. Main / Room LAB		Date 9-3-2010 / Recall Date 9-2011
Mfgr. Sartorius	Model MSP		Serial No. 50501329	

Calibration Instructions:	Internal Cal. ☐	External Cal. ☒	Standard Cal. Procedure ☐	Handbook 44 ☒
List Weights Used	5mg	10mg	1g	2g
1. Prior to Service	5.002mg	10.003mg	1000.008mg	2000.020mg
Tolerance Error	0	0	0	0
2. After Service	5.000mg	10.000mg	1000.000mg	2000.000mg
Corner Load	Prior to Service	Weight Used	2 / 1	3 / 4
Corner Load	After Service	N/A	2 / 1	3 / 4

CORNER-LOAD	LINEARITY	REPRODUCIBILITY
N/A	☑	☑

1. Prior to Service: ☒ This instrument was within tolerance and customer specifications
☐ This instrument was NOT within tolerance and customer specifications

2. After Service: ☒ This instrument IS WITHIN TOLERANCE and customer specifications
☐ This instrument is OUT OF TOLERANCE: DO NOT USE THIS INSTRUMENT. Significant out of tolerance may affect end product.

Reported Uncertainty: N/A
Method used for determining uncertainties is either the Root Sum Square Statistical Method, Total Collective Added Uncertainty, or an Expanded Uncertainty with a *coverage factor K=2*. Provided level of confidence: 95%. Uncertainty calculations available upon request.

TC
Customer

Technical Representative

Original: Customer
Copy: Vendor

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(480) 598-0321 • FAX (480) 598-0768
E-mail: info@apscales.com
Website: apscales.com

TEMP 76 F° R.H. 40 %
AZ RSR License #00 1050
AZ RSA License #014790
P.O. # _____
Equipment # AEC 89

100g x 0.0001g
Capacity/Resolution

±0.0005g
Tolerance Value

Comments:
USE External Cal Only!
INTERnal weight is off

NIST TRACEABILITY
Control No. 100201001 Expires 2-11

Client # 955
Customer Name: Applied Environmental Consult.
Bldg. Main Room LAB
Date 9-3-10
Recall Date 9-2011
Mfgr. Sartorius
Model A200S
Serial No. 10401035

Calibration Instructions: Internal Cal. ☐ External Cal. ☒ Standard Cal. Procedure ☒ Handbook 44 ☐

List Weights Used	0.500g	1g	50g	100g
1. Prior to Service	0.5000g	1.0000g	50.0002g	100.0005g
Tolerance Error	0	0	0	0
2. After Service	0.5000g	1.0000g	50.0000g	100.0000g
Corner Load	Prior to Service	Weight Used	2 / 1	3 / 4
Corner Load	After Service	N/A	2 / 1	3 / 4

CORNER-LOAD	LINEARITY	REPRODUCIBILITY
N/A	☑	☑

1. Prior to Service: ☒ This instrument was within tolerance and customer specifications
☐ This instrument was NOT within tolerance and customer specifications

2. After Service: ☒ This instrument IS WITHIN TOLERANCE and customer specifications
☐ This instrument is OUT OF TOLERANCE: DO NOT USE THIS INSTRUMENT.
Significant out of tolerance may affect end product.

Reported Uncertainty: N/A
Method used for determining uncertainties is either the Root Sum Square Statistical Method, Total Collective Added Uncertainty, or an Expanded Uncertainty with a coverage factor K=2. Provided level of confidence: 95%.
Uncertainty calculations available upon request.

TC
Customer

Technical Representative

Original: Customer
Copy: Vendor

Form # 1987 Rev. 5-10

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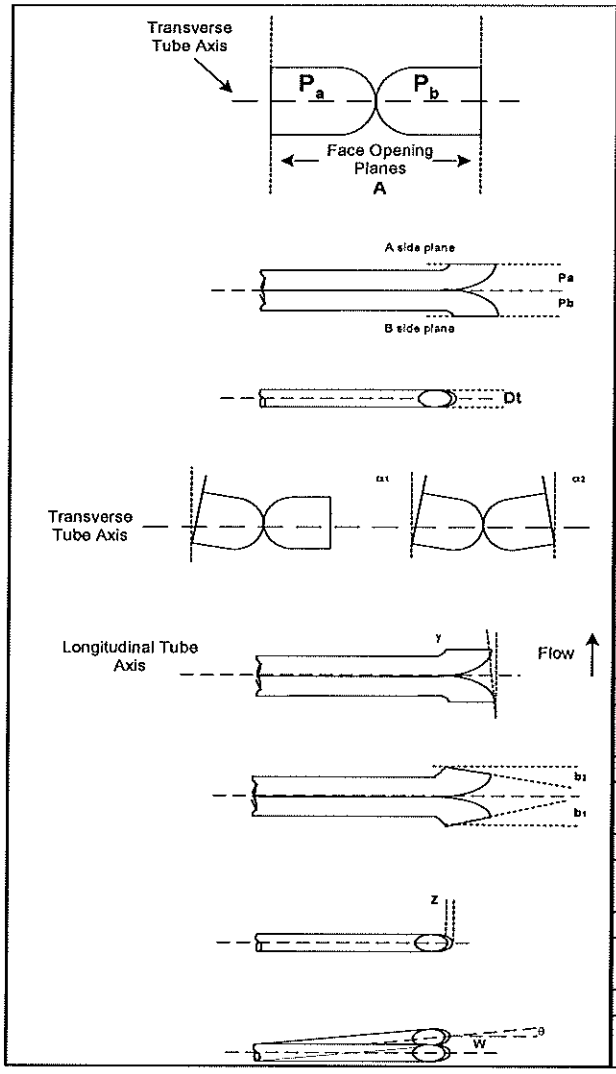
APPLIED ENVIRONMENTAL CONSULTANTS, INC.

TYPE S PROBE PITOT TUBE INSPECTION SHEET (Geometric Calibration)

Note: Method 2 provides the criteria for an acceptably constructed Type S pitot tube. However, the procedure for making the nessary measurements is not specified. One approach is given below.

1. Use a vise with the parallels and perpendicular faces. Use an angle-measuring device (analog or digital) for this check.
2. Place the pitot tube in the vise, and level the pitot tube horizontally using the angle-measuring device.
3. Place the angle-measuring device as shown below.
4. Measure distance A, which is P_A plus P_B. Method 2 specifies that $P_A = P_B$, but provides no tolerance for this measurement. Because this measurement is very difficult, it is suggested that $P_A = P_B = A/2$.
5. Measure the external tube diameter (Dt) with a micrometer, machinist's rule, or internal caliper.
6. Record all data as shown on the form below.
7. Calculate dimensions w and z as shown below.



Pitot Tube Number		**4-5-1-ss**
Level and Perpendicular		**Yes**
Damaged?		**No**
$\alpha 1$	$(-10 \leq \alpha 1 \leq +10)$	**2.4**
$\alpha 2$	$(-10 \leq \alpha 2 \leq +10)$	**2.6**
$\beta 1$	$(-5 \leq \beta 1 \leq +5)$	**1.0**
$\beta 2$	$(-5 \leq \beta 2 \leq +5)$	**2.3**
γ		**2.0**
θ		**0.0**
$Z = A (\tan \gamma)$ [$\leq$ .32cm (0.125 in.)]		**0.067**
$W = A (\tan \theta)$ [$\leq$ 0.08cm (0.031 in.)]		
Dt =	[0.48cm $\leq$ 0.95cm (.188 in. $\leq$ .375 in.)]	**0.6604**
A =	cm	**1.91**
A/2Dt =	$(1.05 \leq PA/Dt \leq 1.50)$	**1.44**

Certification

I certify that the Type S Pitot Tube ID: 4-5-1-ss meets or exceeds all specifications, criteria, and applicable design features.

Certified By: *Geoffrey Baldwin* Date December 22, 2010

APPLIED ENVIRONMENTAL CONSULTANTS

Thermocouple Calibration Inspection Sheet

Thermocouple ID No.	4-5-1-ss	**Thermocouple Type**	**K**	T	S
Calibration Date	December 22, 2010	**Technician**	Geoffrey Baldwin		
Reference Thermometer ID No.	ALTEX Model 222A Serial No. 9925002				

	Reference Temperature (°F)	Reference Temperature (°R)	Thermocouple Temperature (°F)	Thermocouple Temperature (°R)	Difference %
Ice Bath (32 °F, 492 °R)	33	493	33.0	493.0	0.00
Boiling Water (212 °F, 672 °R)	208	668	207.0	667.0	0.15
Hot Oil (360 °F, 820 °R)	258	718	257.0	717.0	0.14
				Average	**0.10**
				Is Percent Difference ≤ 1.50% Yes (Pass) No (Fail)	**PASS**

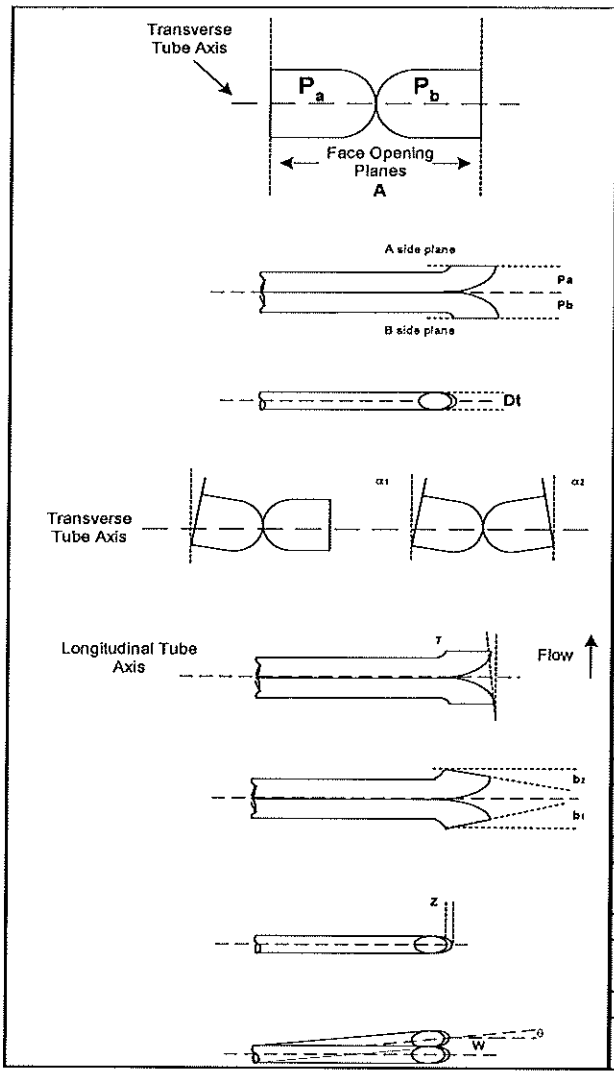
Comments:

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

TYPE S PROBE PITOT TUBE INSPECTION SHEET (Geometric Calibration)

Note: Method 2 provides the criteria for an acceptably constructed Type S pitot tube. However, the procedure for making the nessary measurements is not specified. One approach is given below.

1. Use a vise with the parallels and perpendicular faces. Use an angle-measuring device (analog or digital) for this check.
2. Place the pitot tube in the vise, and level the pitot tube horizontally using the angle-measuring device.
3. Place the angle-measuring device as shown below.
4. Measure distance A, which is P_A plus P_B. Method 2 specifies that $P_A = P_B$, but provides no tolerance for this measurement. Because this measurement is very difficult, it is suggested that $P_A = P_B = A/2$.
5. Measure the external tube diameter (Dt) with a micrometer, machinist's rule, or internal caliper.
6. Record all data as shown on the form below.
7. Calculate dimensions w and z as shown below.



Pitot Tube Number		**7-5-1-Q**
Level and Perpendicular		**Yes**
Damaged?		**No**
$\alpha 1$	$(-10 \leq \alpha 1 \leq +10)$	**1.8**
$\alpha 2$	$(-10 \leq \alpha 2 \leq +10)$	**1.4**
$\beta 1$	$(-5 \leq \beta 1 \leq +5)$	**2.5**
$\beta 2$	$(-5 \leq \beta 2 \leq +5)$	**0.1**
γ		**0.1**
θ		**0.0**
$Z = A (\tan \gamma)$ [≤ .32cm (0.125 in.)]		**0.003**
$W = A (\tan \theta)$ [≤ 0.08cm (0.031 in.)]		
Dt =	[0.48cm ≤ 0.95cm (.188 in. ≤ .375 in.)]	**0.6858**
A =	cm	**1.84**
A/2Dt =	$(1.05 \leq P_A/Dt \leq 1.50)$	**1.34**

Certification

I certify that the Type S Pitot Tube ID: 7-5-1-Q meets or exceeds all specifications, criteria, and applicable design features.

Certified By: *Geoffrey Baldwin* Date December 28, 2010

APPLIED ENVIRONMENTAL CONSULTANTS

Thermocouple Calibration Inspection Sheet

Thermocouple ID No.	7-5-1-Q	**Thermocouple Type**	K / T / S
Calibration Date	December 28, 2010	**Technician**	Geoffrey Baldwin
Reference Thermometer ID No.	ALTEX Model 222A Serial No. 9925002		

	Reference Temperature (°F)	Reference Temperature (°R)	Thermocouple Temperature (°F)	Thermocouple Temperature (°R)	Difference %
Ice Bath (32 °F, 492 °R)	32	492	31.0	491.0	0.20
Boiling Water (212 °F, 672 °R)	212	672	211.0	671.0	0.15
Hot Oil (360 °F, 820 °R)	360	820	360.0	820.0	0.00
				Average	**0.12**
				Is Percent Difference ≤ 1.50% Yes (Pass) No (Fail)	**PASS**

Comments:

Gem State Processing

Compliance Test Report—Corrected
Agglomerator Stack
Heyburn, Idaho
September 21, 2011

Agency:
Idaho Department of Environmental Quality
1363 Fillmore Street
Twin Falls, Idaho 83301

Prepared for:
Gem State Processing
951 Highway 30
Heyburn, Idaho 83336

Prepared by:
Applied Environmental Consultants, a JBR company
1553 West Elna Rae Street, Suite 101
Tempe, Arizona 85281
480.829.0457

November 4, 2011

CERTIFICATION

This certifies that the data collected and presented herein is true and accurate to the best of our knowledge. All attempts were made to collect and analyze the data within the applicable guidelines established by the United States Environmental Protection Agency.

Jason Nockleby, QSTI
Senior Field Manager
Test Team Leader

Mannie L. Carpenter, P.E.
Senior Engineer
Quality Assurance Supervisor

TABLE OF CONTENTS

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1.0 INTRODUCTION

Source emission engineering testing was conducted by Applied Environmental Consultants, a JBR company (AEC) at the Gem State Processing (Gem State) facility located in Heyburn, Idaho on September 21, 2011. Testing was conducted on the exhaust from the agglomerator stack. Table 1.0-1 presents the emission units and emission species that were evaluated during the testing program along with the applicable test methods. Testing was performed by Jason Nockleby and Dan Vandenberg of AEC. Mr. Nockleby served as the test team leader. Testing was conducted in fulfillment of Consent Order – Case No. E-2010.0040 and Air Quality Permit to Construct No. P-2010.0183.

Table 1.0-1 Emission Unit, Emission Species, and Limits

EMISSION UNIT	EMISSION SPECIES	TEST METHOD
Agglomerator	$PM_{10}/PM_{2.5}$	EPA Method 201A/202

1.2 Test Firm Project Specific Personnel

The following were the assignments for designated personnel.

Test Team Leader: Jason Nockleby, QSTI, served as AEC's primary contact with Gem State personnel. Mr. Nockleby was in charge of testing activities, daily QA/QC checks, data reduction and validation, and final report preparation. Mr. Nockleby operated the EPA Method 201A/202 metering console and sampling train. Mr. Nockleby performed the sample recovery.

QA/QC Officer: Mannie Carpenter, P.E., was responsible for ensuring that field QA/QC procedures were followed. Mr. Carpenter was also responsible for the final report review.

Laboratory Manager: Sam Stefanoff coordinated in-house laboratory operations. Mr. Stefanoff was responsible for all glassware and reagent preparation, as well as sample analysis.

Technicians: Dan Vandenberg provided assistance with the project. Mr. Vandenberg performed the initial flow rate traverses, moved the sampling probe and assisted in the sample recovery.

2.0 TEST CHRONOLOGY AND RESULTS SUMMARY

2.1 Test Chronology

Table 2.1-1 presents the chronology of tests that were conducted during the testing program.

Table 2.1-1 Source Testing Chronology – Agglomerator Stack

DATE	TIME	
9/21/11	0828-1037	EPA Methods 1, 2, 3, 4, and 201A/202 – Run 1
9/21/11	1055-1303	EPA Methods 1, 2, 3, 4, and 201A/202 – Run 2
9/21/11	1326-1543	EPA Methods 1, 2, 3, 4, and 201A/202 – Run 3

2.2 Test Results

Table 2.2-1 presents the results of the tests conducted during the compliance program. Support data are presented in the appendices to this report. All particulate was considered to be both PM_{10} and $PM_{2.5}$.

Table 2.2-1 Particulate Results – Agglomerator Stack

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
Date	9/21/11	9/21/11	9/21/11	
Time	0828-1037	1055-1303	1336-1543	
STACK GAS PARAMETERS				
Stack Temperature (°F)	129	131	133	131
Moisture Content (%)	4.79	4.89	4.63	4.77
Volumetric Flow Rate (acfm)	20,269	19,813	19,987	20,023
Volumetric Flow Rate (dscfm)	14,971	14,566	14,685	14,740
Production Feed Rate (ton/hr)	0.696	0.724	0.677	0.70
PARTICULATE EMISSIONS (PM_{10})				
Concentration (gr/dscf)	0.00258	0.00319	0.00149	0.0024
Emission Rate (lb/hr)	0.332	0.398	0.187	**0.31**
Emission Factor (lb/ton feed)	0.476	0.550	0.277	**0.43**
PARTICULATE EMISSIONS ($PM_{2.5}$)				
Concentration (gr/dscf)	0.00247	0.00319	0.00149	0.0024
Emission Rate (lb/hr)	0.316	0.398	0.187	**0.31**
Emission Factor (lb/ton feed)	0.455	0.550	0.277	**0.43**

Emission factors for $PM_{2.5}$ were determined by taking the measured $PM_{2.5}$ emission rate and dividing by the calculated process rate for product material. The average production rate was calculated based on net weight of final product collected in totes. Individual loading rates were calculated and the average loading rate during testing was used as the average production feed rate during each run. Although not labeled, the weights shown in the "Amount" column on the process production data sheet contained in Appendix D is in units of pounds and does not include the weight of the tote.

3.0 TESTING METHODS AND PROCEDURES

3.1 Testing Methods

Table 3.1-1 specifies the test methods used for the emission unit and emission species. Unless deviations are specified in Section 3.4 below, all tests conformed to the applicable methodologies specified in 40 CFR Parts 51 and 60 and the U.S. Environmental Protection Agency Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 3. Particulate testing consisted of three valid reference method test runs. Emission limits and emission factors were calculated as the average of the three valid test runs. Each test run was conducted for 119 minutes. A minimum sample volume of 32 dry standard cubic feet was collected for each test run.

Table 3.1-1 Test Methods

EMISSION UNIT	EMISSION SPECIES	TEST METHOD
Agglomerator Stack	$PM_{10}/PM_{2.5}$	EPA Methods 1-4 and 201A/202

3.2 Sampling Equipment Description

Sampling trains for the particulate tests conformed to the guidelines specified in EPA Methods 201A/202 of 40 CFR Parts 51 and 60. A diagram of this sampling train is presented in Figure 3.2-1. The Method 201A/202 sampling train employed a stainless steel sampling nozzle and liner.

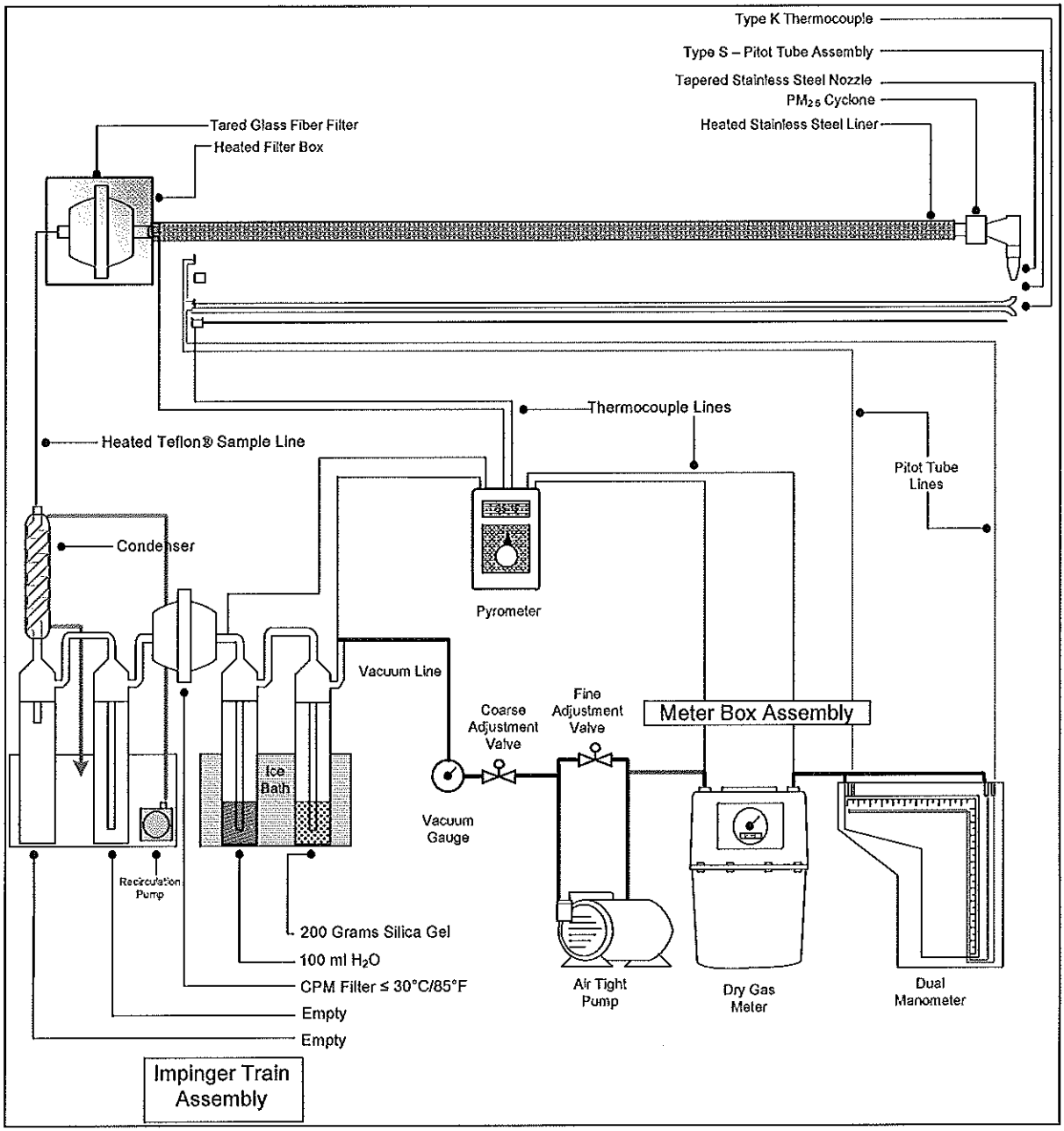


Figure 3.2-1 EPA Method 201A/202 Sampling Train

3.3 Method Descriptions

The following is a brief summary of each of the applicable test methodologies employed during the testing program. Complete method descriptions are presented in the appendices to 40 CFR Parts 51 and 60.

3.3.1 EPA Method 1: Sampling and Velocity Traverses for Stationary Sources

Prior to the source test, a site assessment was performed in order to locate sample points for obtaining the best representative measurements of pollution concentrations and volumetric flow rates. EPA Method 1 takes into account duct area, straight run and cyclonic or stratified flow patterns.

3.3.2 EPA Method 2: Determination of Velocity and Volumetric flow Rates

EPA Method 2 was used to determine stack gas velocity and volumetric flow rates. A calibrated type-S Pitot tube was connected to an inclined manometer and leak checked. Stack gas temperature and manometer displacement (ΔP) were recorded at each traverse point and a duct static pressure was also measured and recorded. Stack gas velocity and volumetric flow rate were calculated in accordance with EPA Method 2.

3.3.3 EPA Method 3: Gas Analysis for the Determination of Dry Molecular Weight

Concurrent with each particulate sample run, an integrated gas sample was drawn through the sample train and collected into a Tedlar bag. The stack gas sample was analyzed by Orsat for fixed gas composition and determination of stack gas dry molecular weight.

3.3.4 EPA Method 4: Determination of Stack Gas Moisture Content

Stack gas moisture content was determined by removing the moisture from the stack gas by drawing a known amount of stack gas through chilled impingers. Impinger weights were determined prior to and following sampling. Stack gas moisture content was determined from the mass of the water collected and the sample gas volume.

3.3.5 EPA Methods 201A/202: Determination of $PM_{2.5}$ and PM_{10}

Preliminary measurements were made prior to conducting the particulate test based on EPA Methods 1, 2, and 3. Percent water was determined by a psychrometric chart using wet bulb and dry bulb (WB-DB) temperatures. These preliminary results were used to determine an appropriate nozzle size for isokinetic sampling.

Stack gas samples were drawn at a constant rate through a tapered stainless steel nozzle, a stainless steel $PM_{2.5}$ sizing device, and an out-of-stack filter. The sample was then drawn through a condenser and a series of four impingers for condensable particulate matter (CPM) capture and moisture collection. CPM was collected in the first two impingers as well as on a CPM filter located between the second and third impinger. After the nitrogen purge, the contents of the condenser, first two impingers, and the front half of the CPM filter housing were extracted with water, acetone, and hexane. The organic and aqueous fractions were then taken to dryness and the residues weighed. The total of both fractions represents the total CPM. The particulate mass collected on the CPM filter was determined by extracting the aqueous and organic fractions from the filter using deionized water and hexane respectively. It was assumed that all CPM will be $PM_{2.5}$. PM collected within the $PM_{2.5}$ sizing device was recovered per EPA Method 201A and the mass collected was determined gravimetrically after removal of uncombined water. All filterable PM collected and CPM will be considered to be PM_{10}. Isokinetic sampling is maintained by varying the sampling time at each sampling point based upon the point velocity.

3.4 Method Deviations

Post-test calibration checks of the dry gas meter (DGM) coefficients using Method Alt-009 were found to be outside the acceptable variation of ±5% (-12.65%). Per EPA Method 5 Section 10.3.3 AEC re-calculated new DGM coefficients. The new DGM coefficients were then assessed to compare their effect on the corrected sample volume. The initial coefficients which gave the lower value of total corrected sample volume were used to calculate reported emission rates. Initial coefficient values were as follows: Y – 0.9798 and $\Delta H_{@}$ – 1.7605. The recalculated post test coefficients are as follows: Y – 0.9869 and $\Delta H_{@}$ – 2.1181. Average isokinetic ratios calculated with both sets of calibration factors were within ±10% of 1.0 as required by Method 5.

Upon analysis, the integrated bag samples were found to contain ambient levels of oxygen and carbon dioxide. A stack gas dry molecular weight of 29.0 g/g-mol was therefore assumed.

4.0 EMISSION UNIT INFORMATION

4.1 Process Conditions

The unit and control equipment operated normally throughout the test period, there were no upset conditions. The plant process and control equipment data are presented in Appendix D.

4.2 Emission Point Information

Particulate traverse point locations were determined following EPA Method 1 guidelines prior to testing. The port locations and the traverse point locations are shown in Table 4.2-1 Figure 4.2-1.

Table 4.2-1 Traverse Point Locations for Agglomerator Outlet

Particulate Traverses (31.5 inches x 27.5 inches) 25 Traverse Points			
PORT	DISTANCE FROM STACK WALL (IN)	POINT	DISTANCE FROM STACK WALL (IN)
1	3.15	1	2.75
2	9.45	2	8.25
3	15.75	3	13.75
4	22.05	4	19.25
5	28.35	5	24.75

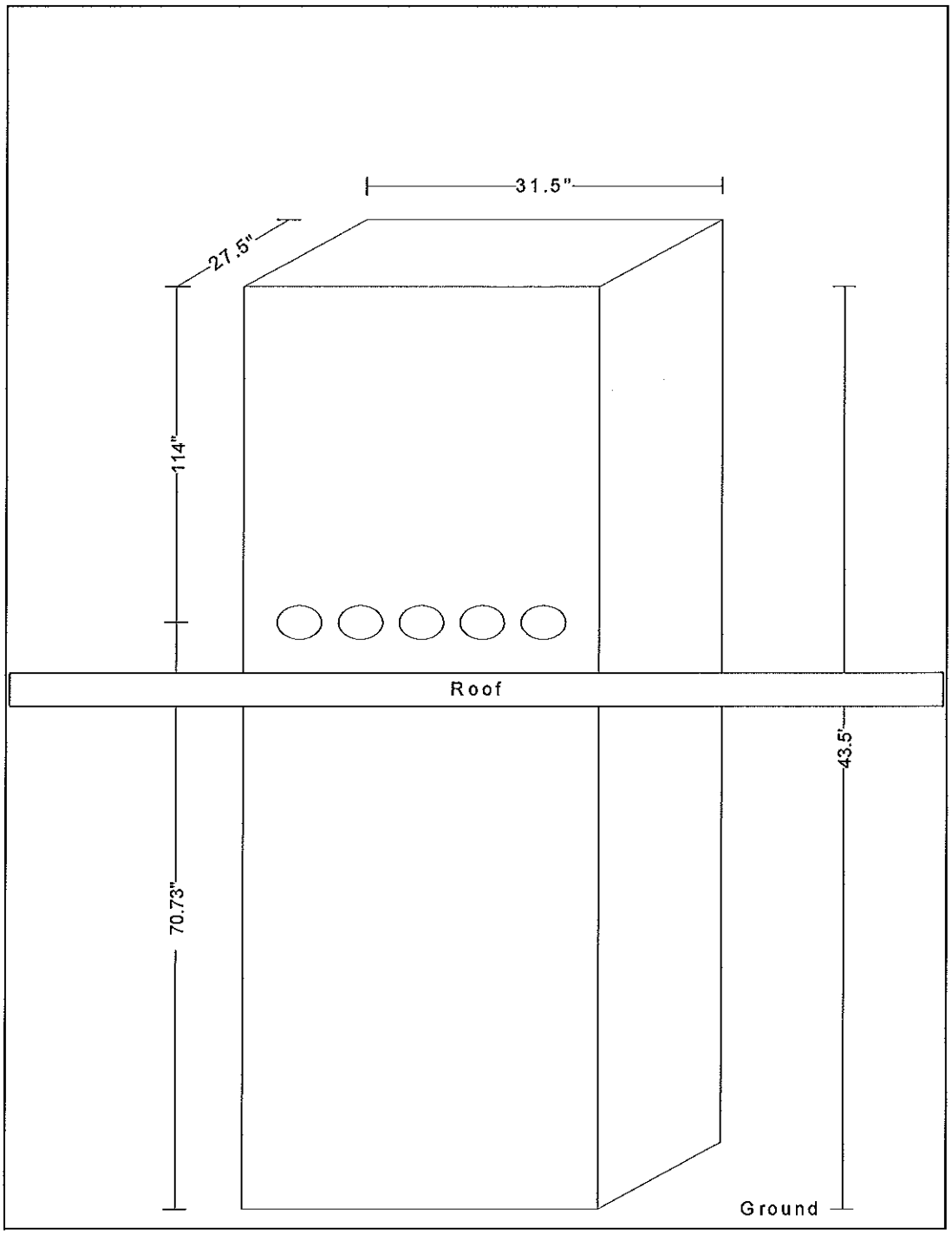


Figure 4.2-1 Agglomerator Stack Outlet

5.0 QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance procedures were performed in accordance with those listed in the appropriate test method and the *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 3.* Complete equipment certification and calibration information is presented in Appendix E. The quality assurance procedures included, but were not limited to the following:

- Inspection of the type-S Pitot tube prior to and following use to confirm proper design criteria specified in EPA Method 2,
- Calibration of the stack temperature sensor against an ASTM thermometer prior to sampling,
- Leak checks of the sampling system after each sample run including the sample train, manometers and Pitot tube lines,
- Calibration of the meter box and dry gas meter on a quarterly basis at a minimum,
- Inspection of the calibrated nozzle prior to and after each sample run to ensure its integrity,
- Assurance that the probe and filter holder heaters operated properly,
- Preparation and analysis of a full set of reagent blanks and field blanks.

APPENDIX A

Test Results

TEST DATA SUMMARY

Client: Gem State
Test Date: 21-Sep-11
Emissions Unit: Agglomerator Stack
Project No.: B.A11190.00

RUN DATA

	Run 1	Run 2	Run 3	Averages
Test Date	21-Sep-11	21-Sep-11	21-Sep-11	
Start Time	8:28 AM	10:55 AM	1:36 PM	
Stop Time	10:37 AM	1:03 PM	3:43 PM	
Area of Stack (ft^2)	4.00	4.00	4.00	
Nozzle Diameter (in.)	0.164	0.164	0.164	
Nozzle Area (ft^2)	0.00015	0.00015	0.00015	
Pitot Tube Calibration Coefficient (C_p)	0.84	0.84	0.84	
Dry Gas Meter Calibration Factor (Y)	0.9798	0.9798	0.9798	
Dry Gas Meter Delta H@ ("H_2O)	1.7605	1.7605	1.7605	
Barometric Pressure ("Hg)	25.85	25.85	25.85	
Sampling Time (min)	119	119	119	119
Total Dry Gas Volume (dcf)	46.720	46.935	47.490	47.048
Corrected Dry Gas Meter Volume (dscf)	39.431	38.251	38.389	38.691
Dry Gas Meter Temperature (°F)	70	89	94	84
Dry Gas Meter Temperature (°R)	530	549	554	544
Average ΔH ("H_2O)	0.50	0.50	0.50	0.50
Isokinetic Variation (%)	90.8	90.5	90.1	90.5
Aerodynamic Cut Size (μm) D_{50-1}	2.58	2.68	2.68	2.65

STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE (Method 2)

	Run 1	Run 2	Run 3	Averages
Average Stack Temperature (°F)	129	131	133	131
Average Stack Temperature (°R)	589	591	593	591
Stack Static Pressure ("H_20)	0.65	0.65	0.65	0.65
Stack Gas Pressure ("Hg)	25.90	25.90	25.90	25.90
Average ΔP ("H_2O)	0.77	0.73	0.74	0.75
Average ΔP Square Root	0.87	0.50	0.50	0.62
Stack Gas Velocity (ft/sec)	56.16	54.89	55.38	55.47
Stack Gas Volumetric Flow Rate (acfm)	13,477	13,174	13,290	13,314
Stack Gas Volumetric Flow Rate (scfm)	10,456	10,183	10,238	10,293
Stack Gas Volumetric Flow Rate (dscfm)	9,955	9,685	9,764	9,801

STACK GAS MOLECULAR WEIGHT (Method 3)

	Run 1	Run 2	Run 3	Averages
Net Volume of O_2 (%)	20.95	20.95	20.95	20.95
Net volume of CO_2 (%)	0.04	0.04	0.04	0.04
Net Volume of N_2 and CO (%)	79.02	79.02	79.02	79.02
Molecular Weight, Dry (lb/lb-mole)	29.00	29.00	29.00	29.00
Molecular Weight, Wet (lb/lb-mole)	28.47	28.46	28.49	28.48

STACK GAS MOISTURE CONTENT (Method 4)

	Run 1	Run 2	Run 3	Averages
Total Water Collected (g)	92.2	91.8	89.6	91.2
Volume of Rinse (ml)	50.0	50.0	50.0	50.0
Net Volume of Water Collected (ml)	42.2	41.8	39.6	41.2
Corrected Volume of Water Collected (scf)	1.986	1.967	1.864	1.939
Water Vapor (B_{WS})	0.0479	0.0489	0.0463	0.0477
Moisture Factor (1- B_{WS})	0.9521	0.9511	0.9537	0.9523
Stack Moisture (%)	4.79	4.89	4.63	4.77

TEST DATA SUMMARY

Client: Gem State
Test Date: 21-Sep-11
Emissions Unit: Agglomerator Stack
Project: B.A11190.00

E.P.A. Method 201-A and 202 Results

	Run 1	Run 2	Run 3	Average
Test Date	9/21/2011	9/21/2011	9/21/2011	
Start Time	8:28	10:55	13:36	
Stop Time	10:37	13:03	15:43	
Volume Corrected to Standard Conditions (dscf)	39.431	38.251	38.389	38.691
Stack Gas Volumetric Flow Rate (dscfm)	14,971	14,566	14,685	14,740
Water Vapor, Bws	0.0477	0.0489	0.0463	0.048
Net Volume of CO2 (%)	0.04	0.04	0.04	0.04
Net Volume of O2 (%)	20.95	20.95	20.95	20.95
Density of Acetone (mg/ml)	79	79	79	79
Density of Hexane (mg/ml)	146	146	146	146
Production Rate (ton/hr)	0.696	0.724	0.677	0.70

PARTICULATE LABORATORY RESULTS AND PROCESS DATA (Method 201A/202)

	Run 1	Run 2	Run 3	Averages
$PM_{2.5}$ Filter Net Mass (mg)	0.0	0.0	0.1	0.03
$PM_{2.5}$ Catch Net Mass (mg)	0.1	2.3	0.1	0.8
Volume of Catch Rinse Solution	40	55	55	50
Mass of Catch Rinse Blank Residue (mg)	0.0	0.0	0.0	0.0
Volume of Catch Rinse Blank Solution (mg)	150	150	150	150
PM_{10} Catch Net Mass (mg)	0.3	0.0	0.0	0.1
Volume of Catch Rinse Solution	30	25	25	27
Mass of Catch Rinse Blank Residue (mg)	0.0	0.0	0.0	0.0
Volume of Catch Rinse Blank Solution (mg)	150	150	150	150
Impingers and Probe Extension Inorganic Net Mass (mg)	5.8	3.4	3.5	4.2
Volume of Inorganic (H_2O) Solution Recovered (ml)	350	270	270	297
Mass of Inorganic (H_2O) Blank Solution Residue (mg)	2.8	2.8	2.8	2.8
Volume of Inorganic (H_2O) Blank Solution (ml)	250	250	250	250
Impingers and Probe Extension Organic Net Mass (mg)	2.4	4.2	2.0	2.9
Volume of Organic (Hexane) Solution Recovered (ml)	150	130	120	133
Mass of Organic (Hexane) Blank Solution Residue (mg)	3.4	3.4	3.4	3.4
Volume of Organic (Hexane) Blank Solution (ml)	90	90	90	90
$PM_{2.5}$ Filter Net Mass (mg)	0.0	0.0	0.1	0.03
$PM_{2.5}$ Net P&N Rinse Mass (mg)	0.1	2.3	0.1	0.8
PM_{10} Net Filterable + Condensible Mass (mg)	6.6	7.9	3.7	6.1
Inorganic Condensible Net Mass (mg)	4.8	2.4	2.5	3.2
Organic Condensible Net Mass (mg)	1.4	3.2	1.0	1.9

PARTICULATE CONCENTRATIONS AND EMISSIONS RATES (Method 201A/202)

	Run 1	Run 2	Run 3	Averages
$PM_{2.5}$ Filter (gr/dscf)	0.000000	0.000000	0.0000402	0.000013
$PM_{2.5}$ P&N Rinse (gr/dscf)	0.0000391	0.000928	0.0000402	0.00034
Impingers and Probe Extension Inorganic (gr/dscf)	0.00188	0.000968	0.00100	0.0013
Impingers and Probe Extension Organic (gr/dscf)	0.000548	0.00129	0.000402	0.00075
Total $PM_{2.5}$ (gr/dscf)	0.00247	0.00319	0.00149	0.0024
Total PM_{10} (gr/dscf)	0.00258	0.00319	0.00149	0.0024
Total Particulate (gr/dscf)	0.00258	0.00319	0.00149	0.0024
Total $PM_{2.5}$ (lb/hr)	0.316	0.398	0.187	0.30
Total PM_{10} (lb/hr)	0.332	0.398	0.187	0.31
Total Particulate (lb/hr)	0.332	0.398	0.187	0.31
Total $PM_{2.5}$ (lb/process ton)	0.455	0.550	0.277	0.43
Total PM_{10} (lb/process ton)	0.476	0.550	0.277	0.43
Total Particulate (lb/process ton)	0.476	0.550	0.277	0.43

APPENDIX B

Field Data Sheets

METHOD 2 - STACK GAS VELOCITY INITIAL TRAVERSE

Stack Shape: C=Circular, R=Rectangular	R
Stack Dimensions LxW (in.)	576.00
Stack Cross-Sectional Area (ft^2)	4.00
Barometric Pressure ("Hg)	25.85
Pitot Tube Calibration Coefficient (Cp)	0.84
Stack Static Pressure	0.65

Traverse Point #	ΔP ("H_2O)	√ΔP ("H_2O)	Stack Temp (°F)	Cyclonic Flow Determination		
				ΔP @ 0°	Angle for ΔP=0	Abs. Angle for ΔP=0
1	0.75	0.87	130	0.00	0.00	0.00
2	0.67	0.82	130	0.00	0.00	0.00
3	0.77	0.88	130	0.00	0.00	0.00
4	0.74	0.86	130	0.00	0.00	0.00
5	0.79	0.89	130	0.00	0.00	0.00
6	0.70	0.84	130	0.00	0.00	0.00
7	0.74	0.86	130	0.00	0.00	0.00
8	0.71	0.84	130	0.00	0.00	0.00
9	0.71	0.84	130	0.00	0.00	0.00
10	0.74	0.86	130	0.00	0.00	0.00
11	0.70	0.84	130	0.00	0.00	0.00
12	0.65	0.81	130	0.00	0.00	0.00
Averages	0.72	0.85	130	0.00	0.00	0.00

Net Volume of O_2 (%)	20.95
Net Volume of CO_2 (%)	0.04
Net Volume of N_2 and CO (%)	79.01
Dry Molecular Weight of Stack Gas Estimate (g/g-mol)	29.00
Percent Moisture in Stack Gas (Estimate) (% H_2O)	3.00%
(1-Bws)	0.9700
Wet stack gas molecular weight	28.67
Stack Temperature (°F)	130
Stack Temperature (°R)	590
Stack Static Pressure ("H_20)	0.65
Stack Gas Pressure ("Hg)	25.90
Avg. Delta P (ΔP)	0.72
Avg. of Sqrt of Delta P (ΔP)	0.85
Stack Gas Velocity (ft/s)	54.39
Stack Gas Volumetric Flow Rate (dscfm)	9,809

Determination of Moisture by Wet Bulb/Dry Bulb

Dry Stack Temperature (°F)	X
Dry Stack Temperature (°C)	
Wet Stack Temperature (°F)	X
Wet Stack Temperature (°C)	
Stack Saturated Vapor Pressure (in. Hg)	
Stack Vapor Pressure (in. Hg)	
Stack Gas Moisture Content (%)	

METHOD 201A - DWELL TIMES - INITIAL TRAVERSE

Stack Cross-Sectional Area (ft^2)	4.00
Barometric Pressure ("Hg)	25.85
Pitot Tube Calibration Coefficient (Cp)	0.84
Stack Static Pressure ("H_2O)	0.65
Dry Molecular Weight of Stack Gas Estimate (g/g-mol)	29.00
Percent Moisture in Stack Gas Estimate (% H_2O)	3.00%
Average Stack Temperature (°F)	130.0
Net Volume of O_2 (%vd)	20.95
Net Volume of O_2 (%vw)	20.32
Net Volume of CO_2 (%)	0.04
Net Volume of N_2 and CO (%)	79.0
Meter Box I.D. No.	6X
Orifice ΔH@	1.7605
Meter Calibration Factor, Y	0.9798
Meter Box Temp. (°F)	90.0

Traverse Point #	Run 1			Run Time	120	Run 2			Run Time	120	Run 3			Run Time	120
	Dwell Time (min)					Dwell Time (min)					Dwell Time (min)				
	ΔP	√ΔP	Calc.	Rounded	Running	ΔP	√ΔP	Calc.	Rounded	Running	ΔP	√ΔP	Calc.	Rounded	Running
1	0.75	0.87	10.19	10.0	10.0	0.75	0.87	10.19	10.0	10.0	0.75	0.87	10.19	10.0	10.0
2	0.67	0.82	9.63	10.0	20.0	0.67	0.82	9.63	10.0	20.0	0.67	0.82	9.63	10.0	20.0
3	0.77	0.88	10.33	10.0	30.0	0.77	0.88	10.33	10.0	30.0	0.77	0.88	10.33	10.0	30.0
4	0.74	0.86	10.12	10.0	40.0	0.74	0.86	10.12	10.0	40.0	0.74	0.86	10.12	10.0	40.0
5	0.79	0.89	10.46	10.0	50.0	0.79	0.89	10.46	10.0	50.0	0.79	0.89	10.46	10.0	50.0
6	0.70	0.84	9.85	10.0	60.0	0.70	0.84	9.85	10.0	60.0	0.70	0.84	9.85	10.0	60.0
7	0.74	0.86	10.12	10.0	70.0	0.74	0.86	10.12	10.0	70.0	0.74	0.86	10.12	10.0	70.0
8	0.71	0.84	9.92	10.0	80.0	0.71	0.84	9.92	10.0	80.0	0.71	0.84	9.92	10.0	80.0
9	0.71	0.84	9.92	10.0	90.0	0.71	0.84	9.92	10.0	90.0	0.71	0.84	9.92	10.0	90.0
10	0.74	0.86	10.12	10.0	100.0	0.74	0.86	10.12	10.0	100.0	0.74	0.86	10.12	10.0	100.0
11	0.70	0.84	9.85	10.0	110.0	0.70	0.84	9.85	10.0	110.0	0.70	0.84	9.85	10.0	110.0
12	0.65	0.81	9.49	9.0	119.0	0.65	0.81	9.49	9.0	119.0	0.65	0.81	9.49	9.0	119.0
Avg/Total	0.72	0.85	120.0	119.0	119.0	0.72	0.85	120.0	119.0	119.0	0.72	0.85	120.0	119.0	119.0

Stack Gas Viscosity	197.2	Cunningham Correction Factor	1.09
Cyclone I Flow Rate	0.48	Reynolds Number	2,654
Cyclone IV Flow Rate	1.434	Diameter of Nozzle (in")	0.164
Delta H@ Tmax	0.45	Diameter of Nozzle (ft^2)	0.00015
Delta H@ Tave	0.49	Total Volume (dcf)	57.273
Delta H@ Tmin	0.54	Est. Corrected Volume (dscf)	46.733

Nozzle	Diameter	Vn	R min	R max	V min	V max	Δ P min	Δ P max	Avg	Avg Diff
1	0.136	79.52	0.80	1.20	63.60	95.44	0.99	2.22	1.61	0.88
2	0.150	65.37	0.80	1.20	52.28	78.46	0.67	1.50	1.08	0.36
3	0.164	54.69	0.80	1.20	43.73	65.64	0.47	1.05	0.76	0.04
4	0.180	45.40	0.80	1.20	36.29	54.49	0.32	0.72	0.52	0.20
5	0.197	37.90	0.80	1.20	30.30	45.50	0.22	0.51	0.36	0.36
6	0.215	31.82	0.80	1.20	25.43	38.20	0.16	0.36	0.26	0.47
7	0.233	27.09	0.80	1.20	21.65	32.53	0.11	0.26	0.19	0.54
8	0.264	21.10	0.80	1.20	16.85	25.35	0.07	0.16	0.11	0.61
9	0.300	16.34	0.80	1.20	13.04	19.64	0.04	0.09	0.07	0.65
10	0.342	12.57	0.80	1.20	10.02	15.12	0.02	0.06	0.04	0.68
11	0.390	9.67	0.80	1.20	7.69	11.64	0.01	0.03	0.02	0.70

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State	Test Date:	21-Sep-11
Start Time:	8:28 AM	Emissions Unit:	Agglomerator Stack
Stop Time:	10:37 AM	Project No.:	B.A11190.00
Run	1		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				602.950	In	Out				
1	10	0.74	0.49	130	606.650	61	55	3.196	55.26	89.2	0.370
2	10	0.80	0.50	128	610.465	64	56	3.283	57.36	87.9	0.382
3	10	0.95	0.50	128	614.400	68	60	3.360	62.50	82.6	0.393
4	10	0.79	0.50	128	618.320	69	61	3.341	57.00	90.0	0.392
5	10	0.80	0.50	129	621.805	72	65	2.950	57.41	79.1	0.348
6	10	0.81	0.50	130	626.050	73	66	3.587	57.81	95.6	0.425
7	10	0.84	0.50	128	629.900	75	70	3.235	58.77	84.6	0.385
8	10	0.71	0.50	129	633.850	77	71	3.310	54.08	94.2	0.395
9	10	0.76	0.50	129	638.170	79	74	3.603	55.95	99.1	0.432
10	10	0.84	0.50	130	642.150	78	74	3.322	58.87	87.0	0.398
11	10	0.68	0.50	130	646.100	82	76	3.279	52.97	95.4	0.395
12	9	0.51	0.50	130	649.670	84	78	2.952	45.87	99.2	0.357
Max/Avg.	119	0.77	0.50	129	46.720	70		3.285	56.15	90.3	0.389

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State	Test Date:	21-Sep-11
Start Time:	8:28 AM	Emissions Unit:	Agglomerator Stack
Stop Time:	10:37 AM	Project No.:	B.A11190.00
Run	1		

Sampling Time, min	119	Meter Calibration Factor, Y	0.9798	H_2O Collected, ml	92.2
Number of Sample Points	12	Nozzle Area, ft^2	0.00015	Net H_20 Collected, V_{lc}, ml	42.2
O_2, %	20.95	Corrected DGM, $V_{m(std)}$, dscf	39.431	Water Vapor Volume, $V_{w(std)}$, scf	1.99
CO_2, %	0.04	Average ΔP, "H_2O	0.77	Water Vapor, B_{ws}	0.0479
N_2 & CO, %	79.02	Average Square Root ΔP	0.87	Moisture Factor, 1- B_{ws}	0.9521
Barometric Pressure	25.85	Average ΔH, "H_2O	0.50	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	0.65	Stack Temperature, T_s, °R	589	Wet Molecular Weight, M_s, lb/lb-mole	28.47
Stack Pressure, P_s, "Hg	25.90	Meter Temperature, T_m, °R	530	Viscosity	195.2
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	56.16	Cyclone Flow Rate	0.449
Cunningham Correction Factor, C_r	1.09	Reynolds Number, N_{re}	2,486	Aerodynamic Cut Size (µm) D_{50}	2.58
				Aerodynamic Cut Size (µm) D_{50-1}	2.58
				Ratio (Z)	1.00

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	665.4	586.3	79.1
H_2O	605.0	604.0	1.0
Empty	723.5	719.3	4.2
Silica Gel	916.5	908.6	7.9
		Sub Total	92.2
		Sample Line Rinse	50.0
		Total	42.2

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	4.00
Stack Flow Rate, acf/min	13,477
Stack Flow Rate, acf/hr	808,646
Stack Flow Rate, scf/min	10,456
Stack Flow Rate, scf/hr	627,360
Stack Flow Rate, dscf/min	9,955
Stack Flow Rate, dscf/hr	597,278
% Isokinetic	90.8

APPLIED ENVIRONMENTAL CONSULTANTS a IBM company

Client: GEM STATE	Meter Box ID: 6X	Stack Diameter (in.): 27.5" x 31.5"	Test Method: EPA 2014/202		Impinger	Final	Initial	Net
Unit:	Meter Yd: 0.9798	Static Pressure: 0.65	Initial Leak: 0.000 @ 10" Hg		#1			
Location: Hayburn, ID	Meter ΔH@: 1.7605	P_{bar}: 25.85	Final Leak: 0.002 @ 7" Hg		#2			
Date: 9-21-11	Probe #: 6B	Assumed Moisture: 3%	Filter Appearance:		#3			
Technician: DV, JN	Liner Material: Qtz	ΔH K-Factor: —	Impinger Appearance:		#4			
Run #: 1	Pitot Tube C_p: 0.84	Start Time: 8:28	Silica Gel Spent (Y/N):		#5			
Page 1 of 1	Nozzle Diameter (in.): 0.164	End Time: 1037	Filter #:	CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3)	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
~~1-2~~	—	—	—	—	—	602.95	—	—	—	—	—	—
1-3	10	2.0	.74	0.49	130	606.65	61	55	359	249	55	50
1-4	20	2.0	.40	0.50	128	610.465	64	56	229	249	51	46
2-1	30	1.0	.95	0.50	128	614.4	60	60	261	252	55	50
2-3	40	1.0	.74	0.50	126	618.32	69	61	239	251	55	50
3-1	50	1.0	.80	0.50	129	621.505	72	65	265	251	58	53
3-4	60	1.0	.61	.5	130	626.05	73	66	251	251	58	53
4-1	70	1.0	.84	.5	129	629.9	75	70	251	251	63	57
4-3	80	1.0	.71	.5	129	633.85	77	71	238	251	62	56
5-1	90	1.0	.76	.5	129	638.17	79	74	247	250	65	57
5-3	100	1.0	.84	.5	130	642.15	78	71	234	250	65	58
5-4	110	2.0	0.68	0.5	130	646.1	82	76	256	251	67	59
5-5	119	2.0	.51	.5	130	649.67	84	78	251	251	65	59

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State	Test Date:	21-Sep-11
Start Time:	10:55 AM	Emissions Unit:	Agglomerator Stack
Stop Time:	1:03 PM	Project No.:	B.A11190.00
Run	2		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				650.165	In	Out				
1	10	0.64	0.50	130	654.135	82	87	3.262	51.40	97.9	0.397
2	10	0.73	0.50	129	658.100	89	84	3.246	54.85	91.2	0.397
3	10	0.81	0.50	130	662.985	90	85	3.992	57.82	106.5	0.488
4	10	0.53	0.50	131	665.900	91	86	2.378	46.81	78.5	0.291
5	10	0.71	0.50	132	669.900	91	87	3.260	54.23	93.1	0.400
6	10	0.74	0.50	132	673.885	92	87	3.245	55.36	90.7	0.399
7	10	0.79	0.50	132	677.855	93	88	3.227	57.20	87.3	0.397
8	10	0.67	0.50	132	681.830	89	88	3.242	52.68	95.3	0.398
9	10	0.75	0.50	132	685.710	93	89	3.151	55.73	87.5	0.388
10	10	0.81	0.50	132	689.770	94	90	3.291	57.92	88.0	0.406
11	10	0.81	0.50	131	693.580	93	90	3.091	57.87	82.6	0.381
12	9	0.78	0.50	132	697.100	93	90	2.856	56.84	77.8	0.352
Max/Avg.	119	0.73	0.50	131	46.935	89		3.187	54.89	89.7	0.391

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State	Test Date:	21-Sep-11
Start Time:	10:55 AM	Emissions Unit:	Agglomerator Stack
Stop Time:	1:03 PM	Project No.:	B.A11190.00
Run	2		

Sampling Time, min	119	Meter Calibration Factor, Y	0.9798	H_2O Collected, ml	91.8
Number of Sample Points	12	Nozzle Area, ft^2	0.00015	Net H_20 Collected, V_{lc}, ml	41.8
O_2, %	20.95	Corrected DGM, $V_{m(std)}$, dscf	38.251	Water Vapor Volume, $V_{w(std)}$, scf	1.97
CO_2, %	0.04	Average ΔP, "H_2O	0.73	Water Vapor, B_{ws}	0.0489
N_2 & CO, %	79.02	Average Square Root ΔP	0.85	Moisture Factor, 1- B_{ws}	0.9511
Barometric Pressure	25.85	Average ΔH, "H_2O	0.50	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	0.65	Stack Temperature, T_s, °R	591	Wet Molecular Weight, M_s, lb/lb-mole	28.46
Stack Pressure, P_s, "Hg	25.90	Meter Temperature, T_m, °R	549	Viscosity	195.6
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	54.89	Cyclone Flow Rate	0.437
Cunningham Correction Factor, C_r	1.09	Reynolds Number, N_{re}	2,408	Aerodynamic Cut Size (µm) D_{50}	2.68
				Aerodynamic Cut Size (µm) D_{50-1}	2.68
				Ratio (Z)	1.00

Impinger Data

Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	515.1	443.2	71.9
H_2O	645.6	644.9	0.7
Empty	803.9	795.4	8.5
Silica Gel	936.1	925.4	10.7
		Sub Total	91.8
		Sample Line Rinse	50.0
		Total	41.8

Mid Test Leak Checks

Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	4.00
Stack Flow Rate, acf/min	13,174
Stack Flow Rate, acf/hr	790,450
Stack Flow Rate, scf/min	10,183
Stack Flow Rate, scf/hr	610,996
Stack Flow Rate, dscf/min	9,685
Stack Flow Rate, dscf/hr	581,112
% Isokinetic	90.5

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

Client: Gem State	Meter Box ID: 6X	Stack Diameter (in.): 27.5" x 31.5"	Test Method: M 201/202		Impinger	Final	Initial	Net
Unit: Bubble sheet Dryer	Meter Yd: 0.9798	Static Pressure: +.65	Initial Leak: 0.004 @ 10" Hg		#1			
Location: Heyburn ID	Meter ΔH @: 1.7605	P_{bar}: 28.85	Final Leak: 0.0 @ 10" Hg		#2			
Date: 9-21-11	Probe #: 6B	Assumed Moisture: 3%	Filter Appearance:		#3			
Technician: DV	Liner Material: QTZ	ΔH K-Factor: N/A	Impinger Appearance:		#4			
Run #: R2	Pitot Tube C_p: 0.84	Start Time: 10:55	Silica Gel Spent (Y/N):		#5			
Page 1 of 1	Nozzle Diameter (in.): 0.164	End Time: ~~12:03~~ 13:03	Filter #:	CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3)	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
start	—	—	—	—	—	650.165	—	—	—	—	—	—
1	10	1.0	0.64	0.50	130	654.135	82	87	225	237	70°	68
2	20	1.0	.73	0.56	129	658.1	89	84	268	230	64	62
3	30	1.0	.81	0.50	130	662.985	90	85	247	255	65	57
4	40	1.0	.73	0.50	131	665.9	91	86	246	249	64	59
5	50	1.0	.71	0.50	132	669.9	91	87	248	247	68	62
6	60	1.0	.74	0.50	132	673.885	92	87	250	253	67	58
7	70	1.0	.79	0.50	132	677.855	93	88	237	250	67	59
8	80	1.0	.67	0.50	132	681.83	89	88	267	256	68	59
9	90	1.0	.75	0.50	132	685.71	93 ~~90~~	89	247	250	70	59
10	100	1.0	.81	0.56	132	689.77	94	90	266	256	70	62
11	110	1.0	.81	0.50	131	693.~~58~~	93	90	248	249	72	65
12	119	1.0	.78	0.50	132	697.1	93	90	248	257	71	65

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State	Test Date:	21-Sep-11
Start Time:	1:36 PM	Emissions Unit:	Agglomerator Stack
Stop Time:	3:43 PM	Project No.:	B.A11190.00
Run	3		

Point #	Run Time	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temperature (°F)	Dry Gas Meter (dcf)	Meter Temperature (°F)		Corrected DGM $V_{m(std)}$ (dscf)	Stack Gas Velocity V_s (ft/sec)	Intermediate Isokinetic Rate (%)	DGM Flow Rate (dcf/min)
Initial	0				697.870	In	Out				
1	10	0.74	0.50	134	701.680	94	90	3.088	55.43	86.3	0.381
2	10	0.81	0.50	134	705.480	94	91	3.077	57.99	82.2	0.380
3	10	0.55	0.50	132	709.420	95	92	3.185	47.70	103.1	0.394
4	10	0.73	0.50	133	713.320	96	92	3.150	55.00	88.6	0.390
5	10	0.81	0.50	133	717.380	95	92	3.282	57.94	87.6	0.406
6	10	0.82	0.50	133	721.365	95	93	3.218	58.30	85.4	0.399
7	10	0.91	0.50	133	725.345	95	92	3.217	61.41	81.0	0.398
8	10	0.71	0.50	133	729.350	94	93	3.237	54.25	92.3	0.401
9	10	0.57	0.50	134	733.350	95	93	3.230	48.65	102.9	0.400
10	10	0.85	0.50	134	737.340	95	93	3.222	59.40	84.0	0.399
11	10	0.75	0.50	133	741.330	96	94	3.217	55.75	89.2	0.399
12	9	0.67	0.50	133	745.360	96	94	3.249	52.70	95.4	0.403
Max/Avg.	119	0.74	0.50	133	47.490	94		3.198	55.38	89.8	0.396

PARTICULATE EMISSION CALCULATIONS

Client:	Gem State	Test Date:	21-Sep-11
Start Time:	1:36 PM	Emissions Unit:	Agglomerator Stack
Stop Time:	3:43 PM	Project No.:	B.A11190.00
Run	3		

Sampling Time, min	119	Meter Calibration Factor, Y	0.9798	H_2O Collected, ml	89.6
Number of Sample Points	12	Nozzle Area, ft^2	0.00015	Net H_20 Collected, V_{lc}, ml	39.6
O_2, %	20.95	Corrected DGM, $V_{m(std)}$, dscf	38.389	Water Vapor Volume, $V_{w(std)}$, scf	1.86
CO_2, %	0.04	Average ΔP, "H_2O	0.74	Water Vapor, B_{ws}	0.0463
N_2 & CO, %	79.02	Average Square Root ΔP	0.86	Moisture Factor, 1- B_{ws}	0.9537
Barometric Pressure	25.85	Average ΔH, "H_2O	0.50	Dry Molecular Weight, M_d, lb/lb-mole	29.00
Static Pressure, P_g, "H_2O	0.65	Stack Temperature, T_s, °R	593	Wet Molecular Weight, M_s, lb/lb-mole	28.49
Stack Pressure, P_s, "Hg	25.90	Meter Temperature, T_m, °R	554	Viscosity	196.3
Pitot Tube Calibration Coefficient, C_p	0.84	Stack Gas Velocity, V_s, ft/sec	55.38	Cyclone Flow Rate	0.439
Cunningham Correction Factor, C_r	1.09	Reynolds Number, N_{re}	2,403	Aerodynamic Cut Size (µm) D_{50}	2.68
				Aerodynamic Cut Size (µm) D_{50-1}	2.68
				Ratio (Z)	1.00

Impinger Data			
Impinger Content	Final Weight (g)	Initial Weight (g)	Net Weight (g)
H_2O	659.1	588.6	70.5
H_2O	607.8	606.8	1.0
Empty	733.3	723.5	9.8
Silica Gel	924.8	916.5	8.3
		Sub Total	89.6
		Sample Line Rinse	50.0
		Total	39.6

Mid Test Leak Checks			
Time	DGM Start	DGM Final	Difference
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
0:00	0	0	0
		Sum	0

Stack Area, A_s, ft^2	4.00
Stack Flow Rate, acf/min	13,290
Stack Flow Rate, acf/hr	797,415
Stack Flow Rate, scf/min	10,238
Stack Flow Rate, scf/hr	614,302
Stack Flow Rate, dscf/min	9,764
Stack Flow Rate, dscf/hr	585,862
% Isokinetic	90.1

APPLIED ENVIRONMENTAL CONSULTANTS a ESR company

Client: Gen1 State	Meter Box ID: 6X	Stack Diameter (in.): 31.5" x 27.5"	Test Method: M201A / 202	Impinger	Final	Initial	Net
Unit: Bobble sheet Dryer	Meter Yd: 0.9798	Static Pressure: +.65	Initial Leak: 0.009 @ 10"	#1			
Location: Heyburn It	Meter ΔH@: 1.7605	P_{bar}: 28.85	Final Leak: 0.002 @ 15"	#2			
Date: 9-21-11	Probe #: 6B	Assumed Moisture: 30/0	Filter Appearance: —	#3			
Technician: DV	Liner Material: QTZ	ΔH K-Factor: N/A	Impinger Appearance:	#4			
Run #: R3	Pitot Tube C_p: 0.84	Start Time: 1336	Silica Gel Spent (Y/N):	#5			
Page 1 of 1	Nozzle Diameter (in.): .164	End Time: 1543	Filter #: CPM Filter#	#6			

Traverse point number	Sampling time (min)	Vacuum (in Hg)	Velocity head (ΔP)	Orifice (ΔH)	Stack Temp (°F)	Sample Volume (ft^3)	Dry Gas Meter Temp		Probe Temp (°F)	Box Temp (°F)	CPM Filter Exit Temp (°F)	Impinger Exit Temp (°F)
							Inlet (°F)	Outlet (°F)				
—	—	—	—.74	—	—	697.87	—	—	—	—	—	—
1-3	10	1.0	~~.50~~	0.50	134	701.68	94	90	258	249	72	68
1-4	20	1.0	.81	0.50	134	705.48	94	91	251	250	67	62
2-1	30	1.0	.55	0.50	132	709.42	95	92	257	250	70	63
2-3	40	1.0	.73	0.50	133	713.32	96	92	249	250	70	63
3-1	50	1.0	.81	0.50	132	717.38	95	92	251	251	73	67
3-4	60	1.0	.82	0.50	133	721.355	95	93	249	250	73	67
4-1	70	1.0	.91	0.50	133	725.345	95	92	251	250	74	65
4-3	80	1.0	.71	0.50	133	729.35	94	93	250	251	74	67
5-1	90	1.0	.57	0.50	134	733.35	95	93	250	251	75	67
5-3	100	1.0	.85	0.50	134	737.39	95	93	251	251	74	65
5-4	110	1.0	.75	0.50	133	741.33	96	94	252	251	71	65
5-4	119	1.0	.67	0.50	133	745.36	96	94	250	251	72	68

APPLIED ENVIRONMENTAL CONSULTANTS a JBR company

RECOVERY DATA

Client: Gem State	Test Method: M 201A/202
Unit: Bubble Sheet Dryer	Date: 9-21-11
Location: Heyburn ID	Project Number:

	RUN 1			RUN 2			RUN 3		
Filter Number:									
Impinger Contents:	Final	Initial	Net	Final	Initial	Net	Final	Initial	Net
Blank	665.4	586.3		515.1	443.2		659.1	588.6	
Blank	605.0	604.0		645.6	644.9		607.8	606.8	
H_2O	723.5	719.3		803.9	795.4		733.3	723.5	
Silica	916.5	908.6		936.1	925.4		924.8	916.5	
Line Rinse, g									
Total Weight, g									

Comments

APPENDIX C

Laboratory Data

JBR ENVIRONMENTAL CONSULTANTS, INC.

Laboratory Analysis Results

Client: Gem State Agglomerator Stacl

Project: B.A11190.00

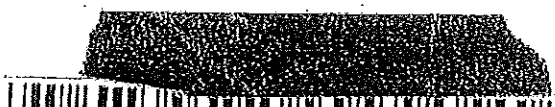
Method: EPA Method 201A/202

Report Date: 9/28/2011

Sample ID	Tin/Filter ID	Run #	Sample Description	Unit	Sample Type	Sample Date	Samples Received	Sample Volume (ml)	Final Gross Mass (g)	Final Tare Mass (g)	Net Mass (g)
11-1004	3788	1	Filter	Agglomerator	Filter	9/21/2011	9/23/2011	#N/A	0.2697	0.2697	0.0000
11-1005	3787	2	Filter	Agglomerator	Filter	9/21/2011	9/23/2011	#N/A	0.2695	0.2695	0.0000
11-1006	3782	3	Filter	Agglomerator	Filter	9/21/2011	9/23/2011	#N/A	0.2698	0.2697	0.0001
11-1007	3784	Blank	Filter Blank	Blank	Filter Blank	9/21/2011	9/23/2011	#N/A	0.2688	0.2688	0.0000
11-1008	A-R1-O/F	1	Organic Fraction	Agglomerator	Acetone/Hexane	9/21/2011	9/23/2011	150	2.7116	2.7092	0.0024
11-1009	A-R2-O/F	2	Organic Fraction	Agglomerator	Acetone/Hexane	9/21/2011	9/23/2011	130	2.6802	2.6760	0.0042
11-1010	A-R3-O/F	3	Organic Fraction	Agglomerator	Acetone/Hexane	9/21/2011	9/23/2011	120	2.7070	2.7050	0.0020
11-1011	A-R1-I/F	1	Inorganic Fraction	Agglomerator	DI H2O	9/21/2011	9/23/2011	350	2.7001	2.6943	0.0058
11-1012	A-R2-I/F	2	Inorganic Fraction	Agglomerator	DI H2O	9/21/2011	9/23/2011	270	2.7113	2.7079	0.0034
11-1013	A-R3-I/F	3	Inorganic Fraction	Agglomerator	DI H2O	9/21/2011	9/23/2011	270	2.7018	2.6983	0.0035
11-1014	C-R1	1	Cyclone	Agglomerator	Acetone	9/21/2011	9/23/2011	30	2.6970	2.6967	0.0003
11-1015	C-R2	2	Cyclone	Agglomerator	Acetone	9/21/2011	9/23/2011	25	2.6807	2.6807	0.0000
11-1016	C-R3	3	Cyclone	Agglomerator	Acetone	9/21/2011	9/23/2011	25	2.7281	2.7281	0.0000
11-1017	2.5-R1	1	PM 2.5	Agglomerator	Acetone	9/21/2011	9/23/2011	40	2.7041	2.7040	0.0001
11-1018	2.5-R2	2	PM 2.5	Agglomerator	Acetone	9/21/2011	9/23/2011	55	2.7112	2.7089	0.0023
11-1019	2.5-R3	3	PM 2.5	Agglomerator	Acetone	9/21/2011	9/23/2011	55	2.7125	2.7124	0.0001
11-1020	FRB-O/F	Blank	Organic Fraction	Agglomerator	Acetone/Hexane	9/21/2011	9/23/2011	90	2.7175	2.7141	0.0034
11-1021	FRB-I/F	Blank	Inorganic Fraction	Agglomerator	DI H2O	9/21/2011	9/23/2011	250	2.7057	2.7029	0.0028
11-1022	Acetone Blank	Blank	Blank	Blank	Acetone	9/21/2011	9/23/2011	150	2.6798	2.6798	0.0000
11-1023	Hexane Blank	Blank	Blank	Blank	Hexane	9/21/2011	9/23/2011	150	2.7044	2.7044	0.0000
11-1024	Di-H2O Blank	Blank	Blank	Blank	DI H2O	9/21/2011	9/23/2011	150	2.7114	2.7102	0.0012

APPENDIX D

Process Data



G1035826 725 102068 8:20

G1035738 725 102068 8:30

G1035723 725 102068 8:30

G1035714 725 102068 9:30

G1035702 725 102068

G1035683 725 102068

G1035698 725 102068 10:17

G1035663 725 102068 11:30

G1035672 725 102068 12:30

G1035635 725 102068 12:45

G1035622 725 102068 13:20

G1035647 725 102068 14:20

G1035658 725 102068 14:20

G1035615 725 102068 14:50

G1035601 725 102068 15:20

G1035597 725 102068 16:20

G1035585 725 102068 16:35

G1035567 725 102068 17:40

G1035578 725 102068 17:40

G1035551 725 102068

G1035546 725 102068

Flakes in

15,005

Shift: 1

Gem State Processing

Loading Report - Rail Car or Truck

Load #: _____
Lot #: _____

Operator Name: Josh Eyre
Date: 9-21-11
Carrier No: Agglomerated Line
Customer: Simplot Traditions Dynamic
Day Code: H092111
Product: GS1012 #1 GRADE
Size: _____
Amount: _____

(16s) mlb 11/4/11

#	Code	Ticket #	Amount	Time	#	Code	Ticket #	Amount	Time
1	H092111	G1035887	1195	8:05	31				
2	H092111	G1035895	1252	9:00	32				
3	H092111	G1035955	1300	9:55	33				
4	H092111	G1035967	1251	10:50	34		Finished Product		
5	H092111	G1035993	1286	11:45	35			Net of totes - mlb 11/4/11	
6	H092111	G1036005	1243	12:40	36				
7	H092111	G1036019	1210	13:30	37				
8	H092111	G1036035	1231	14:25	38				
9	H092111	G1036050	1354	15:25	39				
10	H092111	G1036099	1304	16:20	40				
11	H092111	G1036124	1340	17:20	41				
12	H092111	G1036145	1252	18:10	42				
13	H092111	G1036166	1266	19:05	43				
14					44				
15					45				
16					46				
17					47				
18					48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55	Appt. Time: _____			
26					56	Truck Arrived: _____			
27					57	Start Load: _____			
28					58	Finish Load: _____			
29					59	Truck Depart: _____			
30					60				

Loaded By: _____
Total Amt: 16,484 lbs mlb 11/4/11
Damage: _____
Remarks: _____

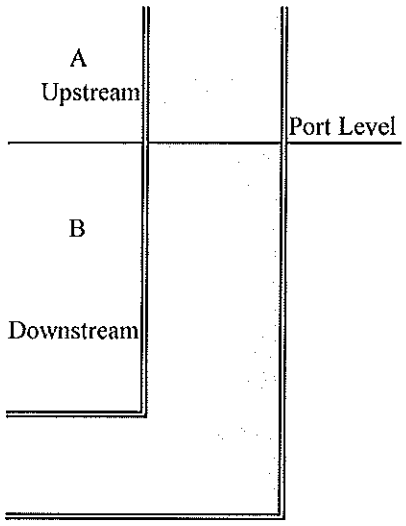
APPENDIX E

Quality Assurance and Calibration Data

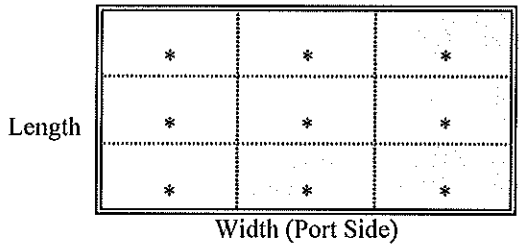
METHOD 1 - SAMPLING TRAVERSES FOR STATIONARY SOURCES

Client:	Gem State
Test Date:	21-Sep-11
Emissions Unit:	Agglomerator Stack
AEC Project No.:	B.A11190.00

Distance Upstream of Disturbance A: (in")	14.68
Distance Downstream of Disturbance B: (in")	58.73
Width of Stack Cross Section (in")	31.50
Length of Stack Cross Section (in")	27.50
Equivalent Diameter	29.36
Number of Stack Diameters Upstream	0.50
Number of Stack Diameters Downstream	2.00
Minimum Number of Traverse Points Needed	25
Actual Number of Traverse Points Used	25
Coupling Length (in")	2



Number of Traverse Points Layout	
Minimum Number of Traverse Points	25
Traverse Points Matrix	5X5
Number of Traverse Points (Width)	5
Number of Traverse Points (Length)	5
Number of Traverse Points Sampled	25



When the eight- and two- diameter criterion can be met, the minimum number of traverse points shall be (1) twelve, for rectangular stacks with equivalent diameters greater than 24 inches; (3) nine for rectangular stacks with equivalent diameters between 12 and 24 inches.

When the eight- and two- diameter criterion can not be met, the minimum number of traverse points is determined from figure 1-1, 40 CFR Pt. 60, App. A-1, Method 1

Traverse Point Locations		
Width (Port Side)	Length (in ")	
	Without Coupling (in ")	With Coupling (in ")
3.15	2.75	4.75
9.45	8.25	10.25
15.75	13.75	15.75
22.05	19.25	21.25
28.35	24.75	26.75

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SEMIANNUAL METER BOX FULL TEST CALIBRATION

(ENGLISH UNITS)

Meter Box # 6X Date: 6/27/11 Barometric Pressure (Pb): 28.9 Calibrated By: GDB

Flow Rate	Orifice Manometer Setting In H2O	Volume			Standard Meter Temperature			Meter Box Gas Volume (ft3)			Meter Box Temperature					
Q	(ΔH)	Initial	Final	Vds	Initial	Final	Tds	Initial	Final	Vd	Inlet	To	Td	Time	Yd	H@
0.949	3.00	932.754	942.634	9.880	80	80	80	157.600	167.600	10.000	85	80	83	0:09:50	0.985	1.7766
0.947	3.00	942.634	952.664	10.030	79	79	79	167.600	177.785	10.185	81	79	80	0:10:01	0.979	1.7904
0.384	0.50	953.345	958.195	4.850	79	79	79	178.500	183.500	5.000	84	80	82	0:11:57	0.974	1.7982
0.390	0.50	958.581	963.435	4.854	79	79	79	183.900	188.900	5.000	84	82	83	0:11:47	0.977	1.7423
0.676	1.50	974.039	983.757	9.718	80.0	80	80	199.795	209.795	10.000	90	84	87	0:13:34	0.981	1.7268
0.674	1.50	983.757	993.465	9.708	81.0	82	81.5	209.795	219.797	10.002	92	89	91	0:13:34	0.983	1.7289
														Average	**0.9798**	**1.7605**

Nomenclature

Pb	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. Hg)
Vd	Gas Meter Volume - Dry (ft3)
Vds	Standard Meter Volume - Dry (ft3)
Td	Average Meter Box Temperature
Tds	Average Standard Meter Box Temperature
To	Outlet Meter box Temperature

Equations

$$Y_d = \frac{V_{ds}\, P_b\, (T_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(T_{ds} + 460)}$$

$$\Delta H@ = \frac{0.0319 \Delta H \left(P_b + \frac{\Delta H}{13.6}\right)}{(T_o + 460)} \left(\frac{(T_{ds} + 460)\Theta}{V_{ds} P_b}\right)^2$$

$$Q = \frac{17.64\, (V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

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SEMIANNUAL METER BOX FULL TEST CALIBRATION

(ENGLISH UNITS)

Meter Box 6X Date: 10/18/11 Barometric Pressure (Pb): 28.85 Calibrated By: GDB

Flow Rate	Orifice Manometer Setting In H_2O	Volume			Standard Meter Temperature			Meter Box Gas Volume (ft3)			Meter Box Temperature					
Q	(ΔH)	Initial	Final	Vds	Initial	Final	Tds	Initial	Final	Vd	Inlet	To	Td	Time	*Yd*	*H@*
0.884	3.00	156.945	166.945	10.000	77	77	77	902.666	912.690	10.024	80	77	79	0:10:43	0.993	2.0557
0.872	3.00	166.945	176.943	9.998	77	77	77	912.690	922.740	10.050	83	78	81	0:10:52	0.994	2.1067
0.347	0.50	177.200	182.200	5.000	77	77	77	923.007	928.125	5.118	83	78	81	0:13:40	0.982	2.2065
0.347	0.50	182.200	187.200	5.000	77	77	77	928.125	933.259	5.134	83	78	81	0:13:40	0.979	2.2065
0.620	1.50	187.489	197.493	10.004	77.0	78	77.5	933.555	943.760	10.205	85	80	83	0:15:17	0.986	2.0694
0.619	1.50	197.493	207.496	10.003	78.0	78	78	943.760	953.976	10.216	87	83	85	0:15:17	0.988	2.0641
														Average	**0.9869**	**2.1181**

Nomenclature

Pb	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. Hg)
Vd	Gas Meter Volume - Dry (ft3)
Vds	Standard Meter Volume - Dry (ft3)
Td	Average Meter Box Temperature
Tds	Average Standard Meter Box Temperature
To	Outlet Meter box Temperature

Equations

$$Y_d = \frac{V_{ds}\, P_b\, (T_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6} \right) (T_{ds} + 460)}$$

$$\Delta H@ = \frac{0.0319 \Delta H \left(P_b + \frac{\Delta H}{13.6} \right)}{(T_o + 460)} \left(\frac{(T_{ds} + 460)\Theta}{V_{ds} P_b} \right)^2$$

$$Q = \frac{17.64\, (V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

EPA APPROVED ALTERNATIVE METHOD ALT-009

Client:	Gem State
Test Date:	21-Sep-11
Emissions Unit:	Agglomerator Stack
Project No.:	B.A11190.00
Meter Box No.:	6X

Run Data

	Run1	Run 2	Run 3	Averages
Test Date	21-Sep-11	21-Sep-11	21-Sep-11	
Start Time	8:28 AM	10:55 AM	1:36 PM	
Stop Time	10:37 AM	1:03 PM	3:43 PM	
Sampling Time, min	119	119	119	
Orifice ΔP, ΔH@, "H_2O	1.7605	1.7605	1.7605	1.7605
Barometric Pressure, P_{bar}, "Hg	25.85	25.85	25.85	25.85
DGM Total, Vm, dcf	46.720	46.935	47.490	47.048
Meter Temperature, T_m, °R	530	549	554	544
Average ΔH, "H_2O	0.50	0.50	0.50	0.50
Average √ΔH, "H_2O	0.71	0.71	0.71	0.71
Dry Molecular Weight, M_d, lb/lb-mole	29.00	29.00	29.00	29.00
Dry Ambient Air Molecular Weight, (lb/lb-mole)	29	29	29	29
Mercury Specific Gravity	13.6	13.6	13.6	13.6
Constant ("Hg/°R) $(cfm)^2$	0.0319	0.0319	0.0319	0.0319

Alternative Method 5 Post-Test Calibration Results

Post Dry Gas Meter Calibration Factor (Y_a)	1.0964	1.1116	1.1031	1.1037
Dry Gas Meter Calibration Factor	0.9798	0.9798	0.9798	0.9798
Percent Difference				-12.65
Pass/Fail Post Calibration				FAIL

Calculations

$$Y_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319 * T_m * 29}{\Delta H @ * \left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right) * M_d}} * \left(\sqrt{\Delta H}\right)_{avg}$$

Y_{qa}	=	Dry gas meter calibration check valve, (dimensionless)
θ	=	Sampling Time, min
V_m	=	DGM Total, Vm, dcf
T_m	=	Meter Temperature, T_m, °R
P_{bar}	=	Barometric Pressure, P_{bar}, "Hg
0.0319	=	$(20.92/528)(0.75)^2$ ("Hg/°R)$(cfm)^2$
ΔH_{avg}	=	Average ΔH, "H_2O
ΔH@	=	Orifice ΔP, ΔH@, "H_2O
M_d	=	Dry Molecular Weight, M_d, Lb/lb-mole
29	=	Dry Ambient Air Molecular Weight, (lb/lb-mole)
13.6	=	Mercury Specific Gravity

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PYROMETER CALIBRATION TEST REPORT

(ENGLISH UNITS)

Pyrometer #:	Meter Box # 6X	Reference Used:	Altek Model 222A
Calibrated By:	GDB	Serial #:	
Date:	6/27/2011	Calibrated By:	Davis Instruments

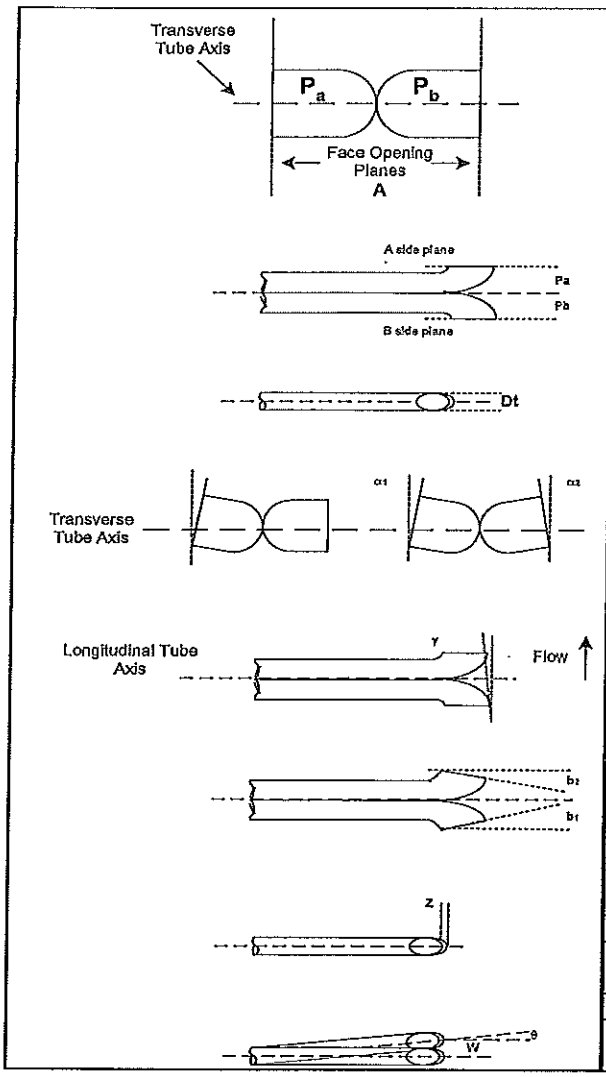
Calibration Reference Setting for Fahrenheit Scale	Pyrometer Reading							
	Stack	Probe	Filter	Exit	Meter In	Meter Out	Aux I	Aux II
50	50	49	50	51	51	51	51	50
100	100	99	100	101	101	101	101	100
150	150	150	151	151	151	151	151	150
200	200	200	201	201	201	201	201	200
250	250	250	251	251	251	251	251	250
300	300	300	300	301	301	301	301	300
350	350	350	351	351	351	351	351	350
400	400	400	401	401	401	401	401	400
450	450	449	450	451	451	451	451	450
500	500	499	500	501	501	501	501	500
550	550	549	550	551	551	551	551	550
600	600	601	601	601	601	601	601	600

APPLIED ENVIRONMENTAL CONSULTANTS, INC.

TYPE S PROBE PITOT TUBE INSPECTION SHEET (Geometric Calibration)

Note: Method 2 provides the criteria for an acceptably constructed Type S pitot tube. However, the procedure for making the nessary measurements is not specified. One approach is given below.

1. Use a vise with the parallels and perpendicular faces. Use an angle-measuring device (analog or digital) for this check.
2. Place the pitot tube in the vise, and level the pitot tube horizontally using the angle-measuring device.
3. Place the angle-measuring device as shown below.
4. Measure distance A, which is P_A plus P_B. Method 2 specifies that $P_A = P_B$, but provides no tolerance for this measurement. Because this measurement is very difficult, it is suggested that $P_A = P_B = A/2$.
5. Measure the external tube diameter (Dt) with a micrometer, machinist's rule, or internal caliper.
6. Record all data as shown on the form below.
7. Calculate dimensions w and z as shown below.



Pitot Tube Number		6B
Level and Perpendicular		Yes
Damaged?		No
α1	(-10 ≤ α1 ≤ +10)	1.6
α2	(-10 ≤ α2 ≤ +10)	0.6
β1	(-5 ≤ β1 ≤ +5)	1.1
β2	(-5 ≤ β2 ≤ +5)	0.6
γ		4.0
θ		0.0
Z = A (tan γ) [≤ .32cm (0.125 in.)]		0.170
W = A (tan θ) [≤ 0.08cm (0.031 in.)]		
Dt =	[0.48cm ≤ 0.95cm (.188 in. ≤ .375 in.)]	0.9398
A =	cm	2.43
A/2Dt = (1.05 ≤ PA/Dt ≤ 1.50)		1.29

Certification

I certify that the Type S Pitot Tube ID: 6B meets or exceeds all specifications, criteria, and applicable design features.

Certified By: *Geoffrey Baldwin* Date December 22, 2010

APPLIED ENVIRONMENTAL CONSULTANTS

Thermocouple Calibration Inspection Sheet

Thermocouple ID No.	6B	**Thermocouple Type**	K / T / S
Calibration Date	December 22, 2010	**Technician**	Geoffrey Baldwin
Reference Thermometer ID No.	ALTEX Model 222A Serial No. 9925002		

	Reference Temperature (°F)	Reference Temperature (°R)	Thermocouple Temperature (°F)	Thermocouple Temperature (°R)	Difference %
Ice Bath (32 °F, 492 °R)	32	492	33.0	493.0	-0.20
Boiling Water (212 °F, 672 °R)	212	672	212.0	672.0	0.00
Hot Oil (360 °F, 820 °R)	359	819	358.0	818.0	0.12
				Average	**-0.03**
				Is Percent Difference ≤ 1.50% Yes (Pass) No (Fail)	**PASS**

Comments:

EPA METHOD 5/202 SAMPLE CALCULATIONS ($PM_{2.5}$)

1.0 NOMENCLATURE AND CONSTANTS

A	Cross-sectional area of stack, m^2 (ft^2).
A_n	Cross-sectional area of nozzle, m^2 (ft^2)
B_{ws}	Water vapor in the gas stream (from Method 4 (reference method) or Method 5), proportion by volume.
C_a	Acetone blank residue concentration, mg/mg.
C_P	Pitot tube coefficient, dimensionless.
C_s	Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, g/dscm (gr/dscf).
I	Percent of isokinetic sampling.
K	0.127 mm H_2O (metric units). 0.005 in. H_2O (English units).
K_P	Velocity equation constant.
M_a	Mass of residue of acetone after evaporation, mg.
M_d	Molecular weight of stack gas, dry basis, g/g-mole (lb/lb-mole).
M_n	Total amount of particulate matter collected, mg.
M_s	Molecular weight of stack gas, wet basis, g/g-mole (lb/lb-mole).
P_{bar}	Barometric pressure at measurement site, mm Hg (in. Hg).
P_g	Stack static pressure, mm Hg (in. Hg).
P_{static}	Average stack static pressure, in. H_2O
P_m	Absolute pressure (for Method 4, same as barometric pressure) at the dry gas meter, mm Hg (in. Hg).
P_s	Absolute stack pressure ($P_{bar} + P_g$), mm Hg (in. Hg).
P_{std}	Standard absolute pressure, 760 mm Hg (29.92 in. Hg).
Q	Dry volumetric stack gas flow rate corrected to standard conditions, dscm/hr (dscf/hr).
T_m	Absolute average DGM temperature at meter, °K (°R)
T_s	Stack temperature, °C (°F)
$T_{s(abs)}$	Absolute stack temperature, °K, (°R). 273 + Ts for metric units, 460 + Ts for English units.
T_{std}	Standard absolute temperature, 293 °K (528 °R)
V_a	Volume of acetone blank, ml.
V_{aw}	Volume of acetone used in wash, ml.
V_f	Final volume of condenser water, ml.
V_i	Initial volume, if any of condenser water, ml.
V_{ic}	Total volume of liquid collected in impingers and silica gel, ml.
V_m	Dry gas volume measured by dry gas meter, dcm (dcf).
$V_{m(std)}$	Dry gas volume measured by the dry gas meter, corrected to standard conditions, dscm (dscf).
$V_{w(std)}$	Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).
$V_{wc(std)}$	Volume of water vapor condensed, corrected to standard conditions, scm (scf).
$V_{wsg(std)}$	Volume of water vapor collected in silica gel, corrected to standard conditions, scm (scf).
V_s	Average stack gas velocity, m/sec (ft/sec).
W_a	Weight of residue in acetone wash, mg.
W_f	Final weight of silica gel or silica gel plus impinger, g.
W_i	Initial weight of silica gel or silica gel plus impinger, g.
Y	Dry gas meter calibration factor.
DH	Average pressure differential across the orifice meter, mm H_2O (in. H_2O).
DP	Velocity head of stack gas, mm H_2O (in. H_2O).
Pa	Density of acetone, mg/ml.
Θ	Total sampling time, min.

2.0 FIELD DATA

%CO_2 in Stack Gas	*0.04*	*% by volume dry basis*
%O_2 in Stack Gas	*20.95*	*% by volume dry basis*
Total Water Collected (Impingers)	*84.3*	*ml*
Sample Line Rinse	*50.0*	*ml*
Total Water Collected (Silica Gel)	*7.9*	*ml*
Dry gas volume measured by dry gas meter, dcf (V_M)	*46.72*	*ft^3*
Dry gas meter calibration factor (Y)	*0.9798*	*dimensionless*
Barometric pressure, in. Hg (P_{bar})	*25.85*	*in. Hg*
Average pressure differential across the orifice meter, in. H_2O (DH)	*0.50*	*dimensionless*
Absolute average DGM temperature at meter, °R (T_m)	*530*	*^oR*
Pitot tube coefficient, dimensionless (Cp)	*0.84*	*dimensionless*
Square Root of the Average Delta P ($\sqrt{\Delta p_{avg}}$)	*0.87*	*in. H_2O*
Absolute stack temperature, °R ($T_{s(abs)}$)	*589*	*^oR*
Average stack static pressure, in. H_2O (P_{static})	*0.65*	*in. H_2O*
Stack Dimensions LxW (in.)"	*31.5 x27.5*	*inches*
Total Sampling Time (min)	*119*	*minutes*
Nozzle Diameter	*0.164*	*inches*

3.0 LABORATORY DATA

Mass of residue of acetone blank after evaporation, g (M_a)	*0*	*g*
Mass of residue of acetone blank after evaporation, mg (Ma)	*0.0*	*mg*
Volume of acetone blank, ml (Va)	*150.00*	*ml*
Density of acetone, mg/ml (P_a)	*79*	*mg/ml*
Volume of acetone used in sample wash, ml (V_{aw})	*40.00*	*ml*
Total amount of particulate matter collected acetone, g (Mn(acetone))	*0.0001*	*g*
Total amount of particulate matter collected Filter, g ($M_{n(filter)}$)	*0.0000*	*g*
Total amount of particulate matter collected Filter blank, g ($M_{n(filter\ blank)}$)	*0.0000*	*g*
Inorganic Fraction Blank Net Mass	*0.0028*	*g*
Organic Fraction Blank Net Mass	*0.0034*	*g*
Mass of Dried Sample, Inorganic	*0.0058*	*g*
Mass of Dried Sample, Organic	*0.0024*	*g*

4.0 EQUATIONS AND SAMPLE CALCULATIONS

4.1 Molecular weight of stack gas, dry basis

$M_d = 29.00$ (assumed)

M_d	***29.00***	***lb/lb-mole***

4.2 Molecular weight of stack gas, wet basis

$M_s = M_d (1-B_{ws}) + 18.0\ B_{ws}$

M_s	***28.47***	***lb/lb-mole***
M_d	*29.00*	*lb/lb-mole*
B_{ws}	*0.0480*	*dimensionless*

4.3 Volume of water vapor condensed, corrected to standard conditions, scf.

$V_{wc(std)} = 0.04706 (V_f - V_i)$

$V_{wc(std)}$	*1.61*	*scf*
Total Water Collected	*84.3*	*ml*
Sample Line Rinse	*50.0*	*ml*
V_f	*34.3*	*ml*
V_i	*0.0*	*ml*

4.4 Volume of water vapor collected in silica gel, corrected to standard conditions, scf.

$V_{wsg(std)} = 0.04715 (W_f - W_i)$

$V_{wsg(std)}$	*0.37*	*scf*
Total Water Collected	*7.9*	*ml*
W_f	*7.9*	*ml*
W_i	*0.0*	*ml*

4.5 Dry gas volume measured by the dry gas meter, corrected to standard conditions, dscf.

$V_{M(std)} = 17.64 V_m Y ((P_{bar} + (\Delta H/13.6)) / T_m)$

$V_{M(std)}$	*39.415*	*dscf*
V_M	*46.72*	*ft^3*
Y	*0.9798*	*dimensionless*
P_{bar}	*25.85*	*in. Hg*
DH	*0.50*	*dimensionless*
T_m	*530*	*^oR*

4.6 Water vapor in the gas stream, proportion by volume.

$B_{ws} = (V_{wc(std)} + V_{wsg(std)}) / (V_{wc(std)} + V_{wsg(std)} + V_{m(std)})$

B_{ws}	*0.0480*	*dimensionless*
$V_{wc(std)}$	*1.61*	*scf*
$V_{wsg(std)}$	*0.37*	*scf*
$V_{M(std)}$	*39.415*	*dscf*

4.7 Absolute stack pressure, in. Hg.

$P_s = P_{bar} + (P_{static} / 13.6)$

P_S	*25.90*	*in. Hg*
P_{bar}	*25.85*	*in. Hg*
P_{static}	*0.65*	*in. H_2O*
P_g	*0.05*	*in. Hg*

4.8 Average stack gas velocity, ft/sec.

$V_S = K_p C_p \sqrt{\Delta p_{avg}} \sqrt{T_{s(abs)}} / (P_s M_s)$

V_S	*56.16*	*ft/sec*
Kp	*85.49*	*pitot tube constant*
Cp	*0.84*	*dimensionless*
$\sqrt{Dp_{avg}}$	*0.8748979*	*in. H_2O*
$T_{s(abs)}$	*589.08333*	*^oR*
P_s	*25.90*	*in. Hg*
M_s	*28.47*	*lb/lb-mole*

4.9 Dry volumetric stack gas flow rate corrected to standard conditions, dscf/hr.

$Q = 3600\ (1\text{-}Bws)\ Vs\ A\ ((Tstd\ Ps) / (Ts(abs)\ Pstd))$

Q	*898,224*	*dscf/hr*
Q	***14,970***	***dscf/min***
3600	*3600*	*Conversion Factor, sec/hr.*
1-Bws	*0.9520*	*dimensionless*
V_s	*56.16*	*ft/sec*
Stack Diameter	*31.5 x27.5*	*in ".*
A	*6.02*	*ft^2*
T_{std}	*528*	*^oR*
P_s	*25.90*	*in. Hg*
$T_{s(abs)}$	*589.08333*	*^oR*
P_{std}	*29.92*	*in. Hg*

4.10 Percent of isokinetic sampling.

$I = 100\ T_{s(abs)}\ (K_4\ V_{ic} + ((V_m\ Y) / T_m)\ (P_{bar} + (DH/13.6))) / (60\ \Theta\ V_s\ P_s\ A_n)$

I	***90.8***	***% Isokinetic***
$T_{s(abs)}$	*589.08333*	*^oR*
K_4	*0.002669*	*Coefficient ((in. Hg)(ft^3))/((ml)(^oR))*
V_{ic}	*42.2*	*Total volume of Liquid collected (ml)*
V_m	*46.72*	*ft^3*
Y	*0.9798*	*dimensionless*
T_m	*530*	*^oR*
P_{bar}	*25.85*	*in. Hg*
DH	*0.50*	*dimensionless*
Θ	*119*	*Total Sampling Time (min)*
V_s	*56.16*	*ft/sec*
P_s	*25.90*	*in. Hg*
Nozzle Diameter	*0.164*	*in ".*
A_n	*0.00015*	*ft^2*

4.11 Acetone blank residue concentration, mg/mg.

$C_a = M_a / (V_a\ P_a)$

C_a	***0.00E+00***	***mg/mg***
M_a	*0.0*	*mg*
V_a	*150.00*	*ml*
P_a	*79*	*mg/ml*

4.12 Acetone wash blank.

$W_a = C_a\ V_{aw}\ P_a$

W_a	***0.0000***	***mg***
C_a	*0.00E+00*	*mg/mg*
V_{aw}	*40.00*	*ml*
P_a	*79.00*	*mg/ml*

4.13 Total amount of particulate matter collected in acetone, blank corrected, mg.

$M_{n(acetone)}$ - Wa

$M_{n\ corrected\ for\ blank}$	***0.1000***	***mg***
$M_{n(acetone)}$	*0.0001*	*g*
$M_{n(acetone)}$	*0.1000*	*mg*
W_a	*0.00*	*mg*
W_a Max	*0.60*	*mg*

4.14 Total amount of particulate matter collected in Filter

$M_{n(filter)}$

M_n	***0.0000***	***mg***
$M_{n(filter)}$	*0.0000*	*g*

4.15 Particulate concentration, gr/dscf.

$C_{sfp} = (K_3\ M_n) / V_{m(std)}$

C_{Sfp}	***0.000039***	***gr/dscf***
K_3	*0.0154*	*gr/mg English units*
$M_{n(acetone)}$	*0.1000*	*mg*
$M_{n(filter)}$	*0.0000*	*mg*
M_n	*0.1000*	*mg*
$V_{m(std)}$	*39.4155*	*dscf*

4.16 Filterable particulate emission rate, MER_{fp}, lb/hr.

MER_{fp} (lb/hr) = 0.00857 * C_{sfp} * Q

Emission Rate	***0.0050***	***lb/hr***
C_{sfp}	*0.000039*	*gr/dscf*
Q	*14,970*	*dscf/min*

0.00857 = (min/hr) / (gr/lb)

4.17 Total amount of condensible particulate matter collected in impingers, blank corrected, M_p mg.

$M_{cp} = M_{ncp} - M_{FB}$

Mcp =	***6.2***	***mg***
M_{ncp}	*0.0082*	*g*
M_{ncp}	*8.2*	*mg*
M_{FB}	*6.20*	*mg (maximum 2.0 mg)*

4.18 Condensible particulate concentration, gr/dscf.

$C_{scp} = (K_3\ M_n) / V_{m(std)}$

C_{Scp}	***0.00242***	***gr/dscf***
K_3	*0.0154*	*gr/mg English units*
M_{cp}	*6.2000*	*mg*
$V_{m(std)}$	*39.4155*	*dscf*

4.19 Condensable particulate mass emission rate, MER_{cp}, lb/hr.

MER_{cp} (lb/hr) = 0.00857 * C_{scp} * Q

MERcp	***0.311***	***lb/hr***
C_{scp}	*0.0024*	*gr/dscf*
Q	*14,970*	*dscf/min*

0.00857 = (min/hr) / (gr/lb)

4.20 Total $PM_{2.5}$ mass emission rate, MER_T, lb/hr

$MER_T = MER_{fp} + MER_{cp}$

MER_T	***0.316***	***lb/hr***
MER_{fp}	*0.00501*	*lb/hr*
MER_{cp}	*0.311*	*lb/hr*

4.21 Total PM2.5 concentration, $C_{2.5}$, gr/dscf.

$C_{2.5} = C_{Sfp} + CS_{cp}$

$C_{2.5}$	***0.00246***	***gr/dscf***
C_{Sfp}	*0.000039*	*gr/dscf*
C_{Scp}	*0.00242*	*gr/dscf*

APPENDIX G

November 27, 1995 David Solomon, USEPA, Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK. NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

NOV 27 1995

Mr. Timothy J. Mohin
Government Affairs Manager
Environment, Health and Safety
Intel Government Affairs
888 17th Street Northwest, #860
Washington, DC 20006-3939

Dear Mr. Mohin:

Thank you for the additional information you provided regarding the exhaust conditioners used in tool operations in the semiconductor industry. We agree with your assessment that, for potential to emit calculations, the exhaust conditioners should be considered as an inherent part of the process.

Criteria for Determining Whether Equipment is Air Pollution Control Equipment or Process Equipment

For purposes of determining a source's potential to emit, it is necessary to calculate the effect of air pollution control equipment. Current Environmental Protection Agency (EPA) regulations and policy allow air pollution control equipment to be taken into account if federally enforceable requirements are in place requiring the use of such air pollution control equipment. There are, however, situations for which case-by-case judgements are needed regarding whether a given device or strategy should be considered as air pollution control equipment, or as an inherent part of the process. The EPA believes that the following list of questions should be considered in making such case-by-case judgements as to whether certain devices or practices should be treated as pollution controls or an inherent to the process:.

1. Is the primary purpose of the equipment to control air pollution?

2. Where the equipment is recovering product, how do the cost savings from the product recovery compare to the cost of the equipment?

3. Would the equipment be installed if no air quality regulations are in place?

If the answers to these questions suggest that equipment should be considered as an inherent part of the process, then the effect of the equipment or practices can be taken into account in calculating potential emissions regardless of whether enforceable limitations are in effect.

Analysis of the criteria for the semiconductor tools listed

No information supplied to date by Intel suggests that product recovery by the exhaust conditioners is significant. That EPA believes that the first and third criteria are satisfied.

Criteria 1. The exhaust conditioners described in your letter are small treatment systems that are local to the point-of-use of process tools such as etching and deposition processes. The primary purposes are to: (1) increase the uptime of the process tools, (2) to minimize safety hazards, and (3) to prevent impurities from entering other processes.

Criteria 3. The information you have provided suggests strongly that air quality regulations are not the driving factor for installation of the equipment. Moreover, the fact that they are "interlocked" with the process chambers suggests that the process cannot operate unless the exhaust conditioner is in use.

Therefore, based upon a review of the information presented the exhaust conditioners are considered by the EPA to be inherent to the process and can be considered in potential emission calculations without federally enforceable requirements.

Cautions

The above determination regarding the use of the localized exhaust conditioners in the semiconductor industry is case-specific. This determination is not intended to set a precedent for localized pollution control equipment for other source types without a similar case-specific review.

While many types of point-of-use and interlocked treatment device may be considered as "inherent," there does exist, of course, air pollution control equipment at semiconductor facilities that may not meet the above criteria. For example, a remote water scrubber located at the roof of a building would generally be considered an air pollution control device.

If you have any further questions regarding this matter, please call Timothy Smith at (919) 541-4718, or Tony Wayne at (919) 541-5439.

sincerely,

David Solomon
Acting Group Leader
Integrated Implementation Group

cc: Chief, Air Branch, Regions I-X
Regional PTE Contacts

APPENDIX H

Stack Parameter Verification Documents

creating solutions for today's environment

JBR Environmental Consultants, Inc.
7669 W. Riverside Dr., Ste. 101
Boise, Idaho 83714
[p] 208.853.0883
[f] 208.853.0884
www.jbrenv.com

MEMORANDUM

To: Kevin Schilling, IDEQ Modeling Coordinator

From: Eric Clark, Environmental Analyst II

cc: Steve Bacom, IDEQ Compliance & Enforcement Coordinator

Date: June 5, 2012

Subject: Gem State Processing Updated Stack Parameters and Modeling Revision for PM-10

The purpose of this correspondence is to inform the Idaho Department of Environmental Quality (IDEQ) that the stack parameters of the emission units in question at Gem State Processing, LLC have been verified by facility personnel.

As requested, the verified information has been provided on IDEQ approved forms. These forms are attached to this memorandum and are provided for your review. In addition, a revised ambient air quality analysis was conducted to demonstrate that there were not any National Ambient Air Quality Standards (NAAQS) violations. The following content of this memorandum describes the modeling verification that was conducted. Please review the results of the analysis. An electronic version of the modeling results is also included in the submittal.

June 4, 2012 Modeling Analysis for PM-10

Two previous modeling analyses were performed in 2011, one in June and one in September. The majority of the information used to conduct those modeling scenarios remained unchanged for the verification run. All meteorological data, emission rates, stack temperatures, exit velocities, and physical location of emission units are consistent with all runs.

The parameters that have been updated for the verification run include measured and verified stack heights and diameters per the request made by Idaho DEQ. These data were obtained from Gem State Processing, LLC following their efforts to accurately measure the stack parameters. For explicit unit by unit information, please see the attached verification forms and/or the modeling input files.

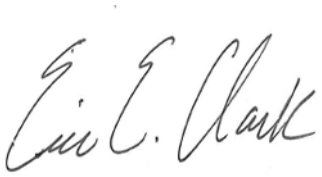
Note that there was a minor update to the Silo Bin Vent Baghouse diameter. The original measured value was 0.04'' as stated in the verification spreadsheet. However, this value was recalculated based on the area of the baghouse vent to 4.12 feet. Please see the attached electronic version and verification forms. Additionally, the flow rate used during the verification run was 0.001 m/sec to represent essentially no stack velocity.

Table 1 illustrates the results of the verification run using the original emission rates and updated stack parameters. The findings suggest that during both the June and September source tests there would not have been a NAAQS violation for the 24-hr or annual PM_{10} standard. While the annual standard has been revoked, it was included here to maintain consistency between all runs.

Table 1 – Verification of Source Test Parameters Model Predicted Impacts

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)	Modeled Maximum Impact ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Total Concentration as % of Applicable Impact Limit
June Verification PM_{10}	24-hr	76	24.83	100.83	150	67.2
	Annual	27	8.59	35.59	50	71.2
September Verification PM_{10}	24-hr	76	25.11	101.11	150	67.4
	Annual	27	8.83	35.83	50	71.7

Please do not hesitate to contact David Strohm, Daniel Heiser or me at (208) 853-0883 with any questions you may have. Thank you.



Attachments:

Verification forms
Spreadsheet of measured stack parameters
Modeling results
All modeling files

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ **Snifter Fan Drum #1-3** Stack ID: **#4-6 is offline**	Stack Description: **Snifter fan drum stack**
Stack Coordinates (UTMs): No.1 **E: 273,380.44 N: 4,714,645.65** No. 2 **E: 273,386.98 N: 4,714,652.44** No.3 **E. 273,387.72 N: 4,714,653.74**	Datum: **NAD 83**
Stack Height: **55 feet (16.78 m)**	Describe how stack height was verified, providing copies of any materials used[a]: **660'' stack height based on As-built.**
Ground level Elevation: **1,268 m**	
Stack Diameter at Point of Release to Atmosphere: **17.81 inches**	Describe how stack diameter was verified, providing copies of any materials used[b]: **As-builts were used for verification.**
Is Stack Capped or a Horizontal Release? **Vertical Release, no cap.**	
Stack Flow Rate (velocity or volumetric flow)[c]: **53.04 ft/sec**	Describe how stack flow was verified, providing copies of any materials used[d]: **Not verified, used originally submitted data.**
Stack Temperature[c]: **111°F**	Describe how stack temperature was verified, providing copies of any materials used[e]: **Not verified, used originally submitted data.**
Name of Person Verifying Stack Parameters:	
Company: Gem State Processing, LLC	Position: General Manager
Signature: Wm. Glover	Date: 6/4/12

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ **Snifter Fan Drum #1-3** Stack ID: **#4-6 is offline**	Stack Description: **Snifter fan drum stack**
Stack Coordinates (UTMs): No.1 **E: 273,380.44 N: 4,714,645.65** No. 2 **E: 273,386.98 N: 4,714,652.44** No.3 **E. 273,387.72 N: 4,714,653.74**	Datum: **NAD 83**
Stack Height: **55 feet (16.78 m)** Ground level Elevation: **1,268 m**	Describe how stack height was verified, providing copies of any materials used[a]: **660'' stack height based on As-built.**
Stack Diameter at Point of Release to Atmosphere: **17.81 inches** Is Stack Capped or a Horizontal Release? **Vertical Release, no cap.**	Describe how stack diameter was verified, providing copies of any materials used[b]: **As-builts were used for verification.**
Stack Flow Rate (velocity or volumetric flow)[c]: **53.04 ft/sec**	Describe how stack flow was verified, providing copies of any materials used[d]: **Not verified, used originally submitted data.**
Stack Temperature[c]: **111˚F**	Describe how stack temperature was verified, providing copies of any materials used[e]: **Not verified, used originally submitted data.**
Name of Person Verifying Stack Parameters:	
Company:	Position:
Signature:	Date:

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ **Exhaust #1-6** Stack ID:	Stack Description: **Exhaust stack**

Stack Coordinates (UTMs): No.1 **E: 273,476.9 N: 4,714,588.63** No. 2 **E: 273,470.83 N: 4,714,603.84** No.3 **E. 273,458.51 N: 4,714,572.32** No. 4 **E: 273,397.28 N: 4, 714,611.26** No. 5 **E: 273,401.72 N: 4,714,615.25** No. 6 **E: 273,412 N: 4, 714,628.19**	Datum: **NAD 83**

Stack Height: **38.8 feet (11.83 m) (#1-#4), 38.0 feet (11.59 m) (#5-#6)** Ground level Elevation: **1,268 m**	Describe how stack height was verified, providing copies of any materials used[a]: **Tape measurement taken. As-builts used as review.**

Stack Diameter at Point of Release to Atmosphere: No.1-3 & 6 **44 inches,** No. 4 & 5 **29.5 inches** Is Stack Capped or a Horizontal Release? **Vertical Release, No cap.**	Describe how stack diameter was verified, providing copies of any materials used[b]: **Tape measurement were used for verification. Vent height was also measured by tape measure.**

Stack Flow Rate (velocity or volumetric flow)[c]: **38.17 ft/sec (#1-#3 & #6), 24.24 ft/sec (#4 & #5)**	Describe how stack flow was verified, providing copies of any materials used[d]: **Not verified, used originally submitted data.**

Stack Temperature[c]: **80° F**	Describe how stack temperature was verified, providing copies of any materials used[e]: **Not verified, used originally submitted data.**

Name of Person Verifying Stack Parameters:		
Company:	Position:	
Signature:		Date:

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ **Bubble Sheet Dryer #1** Stack ID: **#2 is offline**	Stack Description: **Dryer stack**
Stack Coordinates (UTMs): No.1 **E: 273,428.86 N: 4,714,698.39**	Datum: **NAD 83**
Stack Height: **10.5 feet (3.2 m)** Ground level Elevation: **1,268 m**	Describe how stack height was verified, providing copies of any materials used[a]: **Height was tape measured and verified by As-built parameters.**
Stack Diameter at Point of Release to Atmosphere: **32 x 28 in.** Is Stack Capped or a Horizontal Release? **Vertical Release, no cap.**	Describe how stack diameter was verified, providing copies of any materials used[b]: **Diameter was tape measured and verified by As-built parameters.**
Stack Flow Rate (velocity or volumetric flow)[c]: **42.37 ft/sec**	Describe how stack flow was verified, providing copies of any materials used[d]: **Not verified, used originally submitted data.**
Stack Temperature[c]: **131° F**	Describe how stack temperature was verified, providing copies of any materials used[e]: **Not verified, used originally submitted data.**
Name of Person Verifying Stack Parameters:	
Company:	Position:
Signature:	Date:

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ **Exhaust #7-14** Stack ID:	Stack Description: **Exhaust stack**

Stack Coordinates (UTMs): No.7 **E: 273,380 N: 4,714,688** No. 8 **E: 273,410.27 N: 4,714,681.28** No.9 **E. 273,420.46 N: 4,714,692.51** No. 10 **E: 273,406.12 N: 4, 714,726.58** No. 11 **E: 273,442.24 N: 4,714,765.36** No. 12 **E: 273,466.1 N: 4, 714,755.26** No.13 **E:273,454.53 N: 4,714,749.07** No.14 **E: 273,465.36 N: 4,714,737.34**	Datum: **NAD 83**

Stack Height: No. 7 **37.7 feet (11.49 m)** No. 8 & 9 **37.9 feet (11.55 m)** No. 10 **35.9 feet (10.95 m)** No. 11 **35.8 feet (10.91 m)** No. 12 **35.7 feet (10.88 m)** No. 13 & 14 **36.1 feet (11.01 m)** Ground level Elevation: **1,268 m**	Describe how stack height was verified, providing copies of any materials used[a]: **Height was tape measured and verified by As-built parameters.**

Stack Diameter at Point of Release to Atmosphere: No.7 **24 in.** No. 8 & 9 **29.5 in.** No. 10 - 14 **48 in.** Is Stack Capped or a Horizontal Release? **Vertical Release, No cap.**	Describe how stack diameter was verified, providing copies of any materials used[b]: **Diameter was tape measured and verified by As-built parameters. Vent height was also measured by tape measure.**

Stack Flow Rate (velocity or volumetric flow)[c]: No. 7 **21.22 ft/sec No.** No. 8 & 9 **23.77 ft/sec** No. 10 - 12 **22.92 ft/sec** No. 13 – 14 **24.62 ft/sec**	Describe how stack flow was verified, providing copies of any materials used[d]: **Not verified, used originally submitted data.**

Stack Temperature[c]: **80° F**	Describe how stack temperature was verified, providing copies of any materials used[e]: **Not verified, used originally submitted data.**

Name of Person Verifying Stack Parameters:		
Company:	Position:	
Signature:		Date:

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ **Boiler #1-2** Stack ID: **#3 is offline**	Stack Description: **1,600 hp Boiler stack**
Stack Coordinates (UTMs): No.1 **E: 273,355.43 N: 4,714,691.04** No. 2 **E: 273,351.14 N: 4,714,686.74**	Datum: **NAD 83**
Stack Height: No. 1 & 2 **60.79 feet (18.53 m)** Ground level Elevation: **1,268 m**	Describe how stack height was verified, providing copies of any materials used[a]: **Engineering drawings were used for stack height and verified by As-built parameters.**
Stack Diameter at Point of Release to Atmosphere: No. 1 & 2 **36 inches** Is Stack Capped or a Horizontal Release? **Vertical Release, No cap.**	Describe how stack diameter was verified, providing copies of any materials used[b]: **Engineering drawings were used for stack diameter and verified by As-built parameters.**
Stack Flow Rate (velocity or volumetric flow)[c]: No. 1 & 2 **35.16 ft/sec**	Describe how stack flow was verified, providing copies of any materials used[d]: **Not verified, used originally submitted data.**
Stack Temperature[c]: **315° F**	Describe how stack temperature was verified, providing copies of any materials used[e]: **Not verified, used originally submitted data.**
Name of Person Verifying Stack Parameters:	
Company:	Position:
Signature:	Date:

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ **Silo bin vent baghouse** Stack ID:	Stack Description: **Baghouse stack**
Stack Coordinates (UTMs): **E: 273,384.94 N: 4,714,718.11**	Datum: **NAD 83**
Stack Height: **81.42 feet (24.82 m)** Ground level Elevation: **1,268 m**	Describe how stack height was verified, providing copies of any materials used[a]: **Tape measure was used to determine stack height and verified by As-built parameters.**
Stack Diameter at Point of Release to Atmosphere: **4.12 feet** Is Stack Capped or a Horizontal Release? **Vertical Release, No cap.**	Describe how stack diameter was verified, providing copies of any materials used[b]: **The diameter was modeled as a pseudo-point source and thus the value was calculated. The verification measurement was incorrect.**
Stack Flow Rate (velocity or volumetric flow)[c]: **0.001 m/sec**	Describe how stack flow was verified, providing copies of any materials used[d]: **The flow rate was set to essentially zero due the way in which things were modeled.**
Stack Temperature[c]: **70° F**	Describe how stack temperature was verified, providing copies of any materials used[e]: **Not verified, used originally submitted data.**
Name of Person Verifying Stack Parameters:	
Company:	Position:
Signature:	Date:

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.